

Delaware Wildlife Action Plan

Habitat Issues and Actions Summary

Tuesday, July 07, 2015
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Habitat Category: Aquatic

Habitat Group: Estuarine or Marine

Habitat Types: *Marine Offshore*
Marine Oceanic
Marine Nearshore
Estuarine Open Water
Estuarine Coastal

Issue and Actions:

Issue 1 Pollution: Rank: 1.0

Nutrients and sediments from agricultural, commercial, and residential point and non-point sources causing aquatic habitat degradation.

Action 1 Direct Management of Natural Resources: Rank: 1.5
Encourage implementation of existing BMPs in agricultural, residential, and commercial areas.

Action 2 Education: Rank: 1.5
Implement a Master Naturalist/Citizen Scientist program of volunteer monitoring of SGCN and key habitats; recruit people to conduct surveys and protect sites, such as working with landowners on streambank restoration.

Issue 2 Invasive and other problematic species genes and diseases; Invasive non native alien species diseases: Rank: 1.2

Invasive and other problematic species and wildlife diseases (i.e., Green Crab, Japanese Shore Crab, Mitten Crab).

Action 1 Data Collection and Analysis: Rank: 1.7
Assess impacts of invasive and other problematic species and wildlife diseases (i.e., Green Crab, Japanese Shore Crab, Mitten Crab) on key habitats and use this assessment and long-term monitoring to guide adaptive management, education, outreach and enforcement efforts, as necessary.

Issue 3 Pollution; Industrial and military effluents: Rank: 1.3

Chronic water pollution.

Action 1 Data Collection and Analysis; Research survey or monitoring habitat; Monitoring: Rank: 1.7
Assess and monitor the impacts of water pollution on key habitats and SGCN.

	<p><i>Action 2 Law Enforcement; Law Enforcement; Law Enforcement: Rank: 1.7</i></p> <p><i>Support the Division of Water enforcement of existing limits on releases of water pollution.</i></p>	
Issue 4	<p>Pollution; Agricultural and forestry effluents; Herbicides and pesticides:</p> <p>Negative impacts to habitats and wildlife from pesticides used during agricultural and forestry operations.</p> <p><i>Action 1 Outreach; Partner stakeholder engagement: Rank: 2.2</i></p> <p><i>Work with the Delaware Department of Agriculture and the agricultural community to promote implementation of IPM to minimize impacts of agricultural pesticides on SGCN. Work also with landowner incentive programs to develop incentives for IPM implementation on farmland.</i></p>	Rank: 1.3
Issue 5	<p>Natural system modifications; Other ecosystem modifications:</p> <p>Negative impacts and/or long-term impacts of beach renourishment projects caused by sand mining and sand placement (excavation and embankment).</p> <p><i>Action 1 Coordination and Administration; Coordination and Administration; Program/project administrative support: Rank: 1.5</i></p> <p><i>Work with the Division of Watershed Stewardship in selection and use of nearshore borrow areas to take into consideration key habitats and SGCN conservation.</i></p>	Rank: 1.5
Issue 6	<p>Human intrusions and disturbance; Recreational activities:</p> <p>Negative impacts of boats and personal watercraft.</p> <p><i>Action 1 Law Enforcement; Law Enforcement; Law Enforcement: Rank: 1.2</i></p> <p><i>Post "no wake" zones to protect key habitats and enforce them.</i></p> <p><i>Action 2 Law Enforcement; Law Enforcement; Law Enforcement: Rank: 1.2</i></p> <p><i>Strengthen enforcement of regulations for off-road vehicles on managed areas to protect key habitats and SGCN.</i></p> <p><i>Action 3 Data Collection and Analysis; Research survey or monitoring habitat; Monitoring: Rank: 1.5</i></p> <p><i>Assess the impacts of boats and personal watercraft on key habitat and SGCN, and use this assessment and long-term monitoring to adapt management as necessary.</i></p> <p><i>Action 4 Coordination and Administration; Coordination and Administration; Program/project administrative support: Rank: 1.7</i></p> <p><i>Support expansion of the Division of Watershed Stewardship's Clean Marinas Program to reduce pollution impacts to key habitats and SGCN.</i></p>	Rank: 1.5

	<p><i>Action 5 Education; Educator/instructor training:</i></p> <p><i>Work with manufacturers and retailers to develop education and outreach for beach users, boaters, and PWC users about minimizing impacts to SGCN.</i></p>	<p><i>Rank: 1.7</i></p>
Issue 7	Pollution:	<p>Rank: 1.5</p>
	<p>Negative impacts of intentional and accidental spills of toxins and sewage.</p>	
	<p><i>Action 1 Outreach; Partner stakeholder engagement:</i></p> <p><i>Develop/enhance partnerships with Tri-State Birds Rescue and other wildlife rehabilitators to improve emergency response.</i></p>	<p><i>Rank: 1.0</i></p>
	<p><i>Action 2 Coordination and Administration; Coordination and Administration:</i></p> <p><i>Maintain DFW involvement in the Natural Resource Damage Assessment process and in ICS (Incident Command System) training.</i></p>	<p><i>Rank: 1.5</i></p>
	<p><i>Action 3 Education; Educator/instructor training:</i></p> <p><i>Provide training for DFW staff, such as incident management, hazardous materials handling and wildlife rescue, to facilitate involvement in emergency response actions.</i></p>	<p><i>Rank: 1.5</i></p>
	<p><i>Action 4 Coordination and Administration; Coordination and Administration; Program/project administrative support:</i></p> <p><i>Work with the Emergency Response Branch to integrate key habitat and SGCN protection into emergency response planning.</i></p>	<p><i>Rank: 1.8</i></p>
Issue 8	Pollution; Domestic and urban waste water; Sewage:	<p>Rank: 1.5</p>
	<p>Ocean outfall pipes (state waters).</p>	
	<p><i>Action 1 Data Collection and Analysis; Techniques development; Habitat restoration methods:</i></p> <p><i>Research alternative methods of sewage treatment/disposal. Look at West Coast example of constructed wetlands.</i></p>	<p><i>Rank: 2.0</i></p>
	<p><i>Action 2 Data Collection and Analysis:</i></p> <p><i>Research the capability to monitor for pharmaceuticals, diseases, etc. in sewage post-treatment and prior to disposal.</i></p>	<p><i>Rank: 2.0</i></p>

Issue 9 Biological resource use; Fishing and harvesting aquatic resources; Unintentional effects (large scale): Rank: 1.5

Unintentional effects of commercial fisheries dredging on habitats and SGCN.

Action 1 Data Collection and Analysis; Research survey or monitoring fish and wildlife populations: Rank: 1.8

Assess impacts to key habitats and SGCN and use this assessment and long-term monitoring to guide adaptive management, including restrictions on frequency and timing, and the designation of "no dredge zones" if necessary.

Action 2 Data Collection and Analysis; Techniques development: Rank: 1.8
Support research on designing fisheries dredging gear and techniques that minimize impacts to SGCN.

Issue 10 Energy production and mining; Renewable energy: Rank: 1.7

Location of wind farm facilities impacting key habitats and SGCN.

Action 1 Outreach; Partner stakeholder engagement; Others: Rank: 1.5
Work with energy companies to develop standards for the location of wind farms to minimize loss and fragmentation of key habitats.

Issue 11 Pollution; Domestic and urban waste water: Rank: 2.0

Negative impacts due to nutrient and sediments from residential and commercial development practices.

Action 1 Technical Assistance: Rank: 1.8
Work with local jurisdictions to update ordinances to promote and encourage better erosion and sediment control practices.

Action 2 Law Enforcement; Law Enforcement; Law Enforcement: Rank: 1.8
Encourage/incentivize the counties to strengthen enforcement of erosion and sediment control regulations.

Action 3 Coordination and Administration; Coordination and Administration; Agency administrative support: Rank: 1.8
Work with the Division of Watershed Stewardship to ensure integration of key habitat and SGCN conservation and monitoring into all Pollution Control Strategies.

Action 4 Coordination and Administration; Coordination and Administration; Agency administrative support: Rank: 1.8
Work with the Division of Watershed Stewardship to promote the implementation of BMPs for erosion and sediment control.

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| Action 2 | <i>Coordination and Administration; Coordination and Administration; Program/project administrative support: Work with Cooperative Extension to integrate key habitat and SGCN conservation into pesticide applicator training.</i> | Rank: 2.2 |
| Action 3 | <i>Coordination and Administration; Incentives: Work with Cooperative Extension to promote IPM implementation to minimize impacts of residential and commercial pesticides on SGCN. Work also with landowner incentive programs to develop incentives for IPM implementation on private golf courses, recreational facilities and common areas.</i> | Rank: 2.2 |

Issue 15 Energy production and mining; Renewable energy:

Rank: 2.0

Negative impacts of tidal turbines on key habitats and SGCN.

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| Action 1 | <i>Data Collection and Analysis: Monitor proposed sites to gather baseline data prior to installation and implement long-term monitoring of key habitat and potential impacts to SGCN in the event of tidal turbine installation.</i> | Rank: 2.0 |
| Action 2 | <i>Data Collection and Analysis: Review existing research and conduct further research assessing impacts of tidal turbines.</i> | Rank: 2.0 |
| Action 3 | <i>Data Collection and Analysis; Techniques development: Support research on improving the design of turbines to minimize impacts to SGCN.</i> | Rank: 2.0 |
| Action 4 | <i>Outreach; Partner stakeholder engagement; Others: Work with energy companies to develop standards for the location of tidal turbines to minimize impacts to SGCN.</i> | Rank: 2.0 |

Issue 16 Biological resource use; Fishing and harvesting aquatic resources; Intentional use:

Rank: 2.0

Negative impacts to habitats, SGCN, and other wildlife due to inappropriate hunting and fishing.

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| Action 1 | <i>Coordination and Administration; Coordination and Administration: Maintain compliance with interstate management agreements.</i> | Rank: 1.5 |
| Action 2 | <i>Law Enforcement; Law Enforcement; Law Enforcement: Strengthen enforcement of existing recreational and commercial fishing regulations.</i> | Rank: 2.0 |
| Action 3 | <i>Education; Student training; Aquatic resource education: Incorporate information about SGCN conservation into the Fishing Guide.</i> | Rank: 2.2 |

	<p><i>Action 4 Coordination and Administration; Coordination and Administration; Program/project administrative support: Integrate SGCN conservation into fishing regulations.</i></p>	Rank: 2.2
Issue 17	<p>Biological resource use; Fishing and harvesting aquatic resources; Unintentional effects (subsistence/small scale):</p>	Rank: 2.0
	<p>Negative impacts to SGCN (e.g. fishing gear entanglement) due to ghost gear</p>	
	<p><i>Action 1 Outreach; Partner stakeholder engagement; Others: Evaluate expanding International Coastal Cleanup Day to include recovery of submerged, lost or abandoned fishing gear.</i></p>	Rank: 1.8
	<p><i>Action 2 Outreach; Partner stakeholder engagement; Others: Develop education and outreach about reducing the impacts of entanglement on SGCN for distribution with commercial fishing licenses.</i></p>	Rank: 2.2
	<p><i>Action 3 Education; Student training; Aquatic resource education: Incorporate information about reducing the impacts of entanglement on SGCN into the Fishing Guide.</i></p>	Rank: 2.2
	<p><i>Action 4 Outreach; Partner stakeholder engagement; Others: Expand efforts to recover and recycle fishing line and gill nets using Florida's "Monofilament Recovery and Recycling Program" or a similar strategy.</i></p>	Rank: 2.5
Issue 18	<p>Transportation and service corridors; Shipping lanes:</p>	Rank: 2.0
	<p>Transportation and utility operations and maintenance - Channel dredging.</p>	
	<p><i>Action 1 Outreach; Partner stakeholder engagement; Government agency: Work with the Division of Water and US Army Corps of Engineers to integrate key habitat and SGCN conservation into dredging plans.</i></p>	Rank: 1.8
Issue 19	<p>Biological resource use; Fishing and harvesting aquatic resources; Unintentional effects (large scale):</p>	Rank: 2.2
	<p>Negative impacts to wildlife and SGCN due to fisheries bycatch.</p>	
	<p><i>Action 1 Data Collection and Analysis; Research survey or monitoring fish and wildlife populations: Assess impacts to SGCN and use this assessment and long-term monitoring to guide adaptive management, education, outreach and enforcement efforts, as necessary.</i></p>	Rank: 1.8
	<p><i>Action 2 Data Collection and Analysis; Techniques development: Support research on designing fishing gear and techniques that minimize impacts to SGCN.</i></p>	Rank: 2.2

Issue 20 Natural system modifications; Other ecosystem modifications:

Rank: 2.3

Habitat loss and fragmentation due to dredge spoil disposal.

Action 1 Direct Management of Natural Resources; Create new habitat or natural processes: Rank: 1.7

Work with the Division of Watershed Stewardship and the US Army Corps of Engineers to identify sites for use of dredge spoils to create/restore key habitats.

Action 2 Direct Management of Natural Resources; Create new habitat or natural processes: Rank: 1.7

Work with the Division of Watershed Stewardship and the US Army Corps of Engineers to incorporate key habitat and SGCN conservation into spoil disposal plans.

Action 3 Outreach; Partner stakeholder engagement; Government agency: Rank: 1.8

Work with the Division of Watershed Stewardship and the US Army Corps of Engineers to mitigate contaminant impacts to SGCN.

Issue 21 Natural system modifications:

Rank: 2.3

Loss of SGCN and other wildlife due to entrainment, entrapment, and impingement at water intakes in industrial facilities.

Action 1 Outreach; Partner stakeholder engagement; Others: Rank: 1.8

Work with utilities and industry to assess impacts to SGCN from impingement/entrapment/entrainment, and adapt the design and operation of water intakes as necessary for SGCN conservation.

Issue 22 Pollution; Industrial and military effluents; Seepage from mining:

Rank: 2.5

Negative impacts to habitats and wildlife from sand and gravel quarrying.

Action 1 Coordination and Administration; Incentives: Rank: 1.7

Work with the Division of Watershed Stewardship and landowner incentive programs to develop BMPs, and corresponding incentives, for quarries to minimize impacts of sediments on key habitats.

Issue 23 Pollution; Excess energy; Thermal pollution:

Rank: 2.5

Negative impacts to key habitats, SGCN, and other wildlife from thermal pollution from power plants.

Action 1 Data Collection and Analysis; Techniques development: Rank: 2.3

Support research to assess impacts of thermal pollution on SGCN to inform better management recommendations.

Issue 24 Pollution:

Rank: 2.7

Impacts of disposal of contaminated materials into open water.

Action 1 Law Enforcement:

Rank: 2.0

*Restrict open water disposal of contaminated materials.***Issue 25 Natural system modifications:**

Rank: 3.3

Loss of SGCN and other wildlife due to entrainment, entrapment, and impingement at water intakes in industrial facilities.

Action 1 Law Enforcement:

Rank: 2.0

*Better enforcement of observer reporting of interactions with SGCN at industrial facilities with water intake systems. Increased transparency.***Habitat Group: Riverine**

Habitat Types:*Piedmont Small and Medium River**Piedmont Headwaters and Creeks**Freshwater Tidal Open Water**Freshwater Tidal Coastal (Rivers, Creeks)**Coastal Plain Small and Medium River**Coastal Plain Headwaters and Creeks***Issue and Actions:****Issue 1 Pollution; Agricultural and forestry effluents:**

Rank: 1.2

Agricultural and forestry operations - Nutrients and sediments.

Action 1 Coordination and Administration; Coordination and Administration; Agency administrative support:

Rank: 1.2

*Work with the Delaware Department of Agriculture to promote the implementation of BMPs for erosion and sediment control.**Action 2 Coordination and Administration; Coordination and Administration; Agency administrative support:*

Rank: 1.2

*Work with the Division of Watershed Stewardship to ensure integration of key habitat and SGCN conservation and monitoring into all Pollution Control Strategies.**Action 3 Coordination and Administration; Coordination and Administration; Agency administrative support:*

Rank: 1.3

Work with the Division of Watershed Stewardship to integrate key habitat and SGCN conservation into state water quality standards for nutrients and sediments.

Rank: 1.2

Action 1	Law Enforcement; Law Enforcement; Law Enforcement: Support the Division of Water enforcement of existing limits on releases of water pollution.	Rank: 1.2
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Rank: 1.2

<i>Action 1</i>	<i>Law Enforcement; Law Enforcement; Law Enforcement: Encourage/incentivize the counties to strengthen enforcement of erosion and sediment control regulations.</i>	<i>Rank: 1.2</i>
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Action 3	<i>Coordination and Administration; Coordination and Administration; Agency administrative support:</i> <i>Work with the Division of Watershed Stewardship to integrate key habitat and SGCN conservation into state water quality standards for nutrients and sediments.</i>	Rank: 1.3
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Rank: 1.2

Action 1	Coordination and Administration; Incentives:	Rank: 1.7
	<p><i>Work with the Division of Watershed Stewardship and landowner incentive programs to develop BMPs, and corresponding incentives, for quarries to minimize impacts of sediments on key habitats.</i></p>	

Issue 5 Invasive and other problematic species genes and diseases; Invasive non native alien species diseases; Unspecified species:

Rank: 1.3

Negative impacts of invasive plants and wildlife on key habitat and SGCN (i.e., Asiatic Clam, Phragmites, etc.).

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| <i>Action 1</i> | <i>Direct Management of Natural Resources; Planting seeding:</i>

<i>Require use of native, Delaware indigenous species for new plantings or replantings on lands managed by the state, similar to the Native Plants Policy of the Division of Parks and Recreation.</i> | <i>Rank: 1.2</i> |
| <i>Action 2</i> | <i>Coordination and Administration; Coordination and Administration; Program/project administrative support:</i>

<i>Support implementation of the Delaware Invasive Species Management Plan, as appropriate, to reduce the impacts of invasive species on key habitats and SGCN.</i> | <i>Rank: 1.2</i> |
| <i>Action 3</i> | <i>Outreach; Partner stakeholder engagement:</i>

<i>Work with the Delaware Department of Transportation, Delaware Center for Horticulture and Cooperative Extension to enhance transportation construction and maintenance practices such as requiring the planting of native species, and limiting mowing during breeding, migration or other critical times for SGCN.</i> | <i>Rank: 1.2</i> |
| <i>Action 4</i> | <i>Planning:</i>

<i>Work with the Delaware Invasive Species Council and conservation land managers to develop and implement adaptive management plans for control of invasive species.</i> | <i>Rank: 1.2</i> |
| <i>Action 5</i> | <i>Direct Management of Natural Resources; Invasive species control:</i>

<i>Work with the Delaware Invasive Species Council and conservation land managers to assess and monitor impacts of invasive plants using the Delaware Alien Plant Invasiveness Risk Assessment protocol, and prioritize control efforts based on degree of risk.</i> | <i>Rank: 1.3</i> |
| <i>Action 6</i> | <i>Data Collection and Analysis; Research survey or monitoring habitat; Monitoring:</i>

<i>Work with the Delaware Invasive Species Council and conservation land managers to conduct quantitative invasive plant surveys of key habitats.</i> | <i>Rank: 1.3</i> |
| <i>Action 7</i> | <i>Outreach; Partner stakeholder engagement:</i>

<i>Develop education and outreach, partnerships, voluntary guidelines, incentives, and/or regulations, as necessary, for controlling invasive plants on private property and in private commerce, to minimize impacts to key habitats.</i> | <i>Rank: 1.5</i> |

	<p><i>Action 8 Coordination and Administration; Coordination and Administration:</i></p> <p><i>Work with the Delaware Invasive Species Council to establish an interagency early detection and rapid response system to react to new invasions.</i></p>	<p><i>Rank: 1.5</i></p>
Issue 6	<p>Transportation and service corridors; Shipping lanes:</p>	<p>Rank: 1.3</p>
	<p>Negative impacts to habitats and other wildlife due to channel dredging.</p>	
	<p><i>Action 1 Outreach; Partner stakeholder engagement; Government agency:</i></p> <p><i>Work with the Division of Water and US Army Corps of Engineers to integrate key habitat and SGCN conservation into dredging plans.</i></p>	<p><i>Rank: 1.2</i></p>
Issue 7	<p>Transportation and service corridors:</p>	<p>Rank: 1.3</p>
	<p>Negative impacts to habitats and wildlife due to altered hydrology from transportation and utility operations and maintenance.</p>	
	<p><i>Action 1 Coordination and Administration; Coordination and Administration; Program/project administrative support:</i></p> <p><i>Work with the Delaware Department of Transportation to integrate key habitat and SGCN conservation into stormwater management design.</i></p>	<p><i>Rank: 1.2</i></p>
Issue 8	<p>Natural system modifications; Dams and water management use; Extraction of surface water (unknown use):</p>	<p>Rank: 1.3</p>
	<p>Negative impacts to habitats and wildlife due to extraction of surface water for residential and commercial development practices.</p>	
	<p><i>Action 1 Law Enforcement; Law Enforcement; Law Enforcement:</i></p> <p><i>Encourage the counties to strengthen enforcement of stormwater management regulations.</i></p>	<p><i>Rank: 1.2</i></p>
	<p><i>Action 2 Coordination and Administration; Coordination and Administration; Program/project administrative support:</i></p> <p><i>Work with the Division of Watershed Stewardship to ensure integration of key habitat and SGCN conservation and monitoring into all Pollution Control Strategies.</i></p>	<p><i>Rank: 1.2</i></p>
	<p><i>Action 3 Coordination and Administration; Coordination and Administration; Program/project administrative support:</i></p> <p><i>Work with the Division of Watershed Stewardship to promote the implementation of BMPs for stormwater management.</i></p>	<p><i>Rank: 1.2</i></p>

Issue 9 Natural system modifications; Dams and water management use: Rank: 1.3

Negative impacts to habitats and wildlife from ditching and draining for agriculture and forestry operations.

Action 1 Coordination and Administration; Incentives: Rank: 1.2

Work with the Division of Watershed Stewardship to provide incentives to tax ditch associations to implement BMPs that minimize impacts to key habitats.

Action 2 Coordination and Administration: Rank: 1.5

Collaborate with the Tax Ditch Association to come to an agreement.

Action 3 Planning: Rank: 2.0

Discourage the formation of new tax ditches in sensitive areas or where it will cause habitat degradation.

Issue 10 Pollution; Industrial and military effluents; Type unknown: Rank: 1.5

Negative impacts of intentional and accidental spills of toxins and sewage.

Action 1 Outreach; Partner stakeholder engagement: Rank: 1.2

Develop/enhance partnerships with Tri-State Birds Rescue and other wildlife rehabilitators to improve emergency response.

Action 2 Coordination and Administration; Coordination and Administration; Program/project administrative support: Rank: 1.2

Work with the Emergency Response Branch to integrate key habitat and SGCN protection into emergency response planning.

Issue 11 Natural system modifications; Dams and water management use: Rank: 1.5

Negative impacts to habitats and wildlife due to altered hydrology from agricultural and forestry operations.

Action 1 Coordination and Administration; Coordination and Administration; Agency administrative support: Rank: 1.2

Work with the Delaware Department of Agriculture to promote the implementation of BMPs for stormwater management.

Action 2 Coordination and Administration; Coordination and Administration; Agency administrative support: Rank: 1.2

Work with the Division of Watershed Stewardship and Tributary Action Teams to ensure integration of key habitat and SGCN conservation and monitoring into all Pollution Control Strategies.

Issue 12 Transportation and service corridors; Roads and railroads:

Rank: 1.5

Negative impacts to habitats and wildlife due to transportation infrastructure causing habitat loss and fragmentation.

Action 1 Coordination and Administration; Coordination and Administration; Agency administrative support: Rank: 1.2

Work with the Delaware Department of Transportation to develop BMPs to integrate key habitat and SGCN conservation into landscaping, mowing, invasive plant control and other road maintenance, including preserving and restoring buffers and reducing edge effects.

Action 2 Planning; Land use planning: Rank: 1.2

Work with the Delaware Department of Transportation to integrate key habitat and SGCN conservation into long-range transportation planning.

Action 3 Coordination and Administration; Coordination and Administration; Agency administrative support: Rank: 1.2

Work with the Delaware Department of Transportation to integrate key habitat and SGCN conservation into wetland and forest mitigation.

Issue 13 Natural system modifications; Dams and water management use; Dams (size unknown):

Rank: 1.7

Negative impacts to habitats and wildlife due to dam operations.

Action 1 Data Collection and Analysis: Rank: 1.2

Assess the impacts of dam removal on key habitats and SGCN, and use this assessment and long-term monitoring to guide adaptive management, including control of sediments and associated toxins as necessary.

Action 2 Outreach; Partner stakeholder engagement; Government agency: Rank: 1.2

Work with the Division of Water and water utilities to evaluate the application of "ecologically sustainable water management" practices to dam operations to minimize impacts to key habitats and SGCN.

Action 3 Planning: Rank: 1.8

Complete a cost/benefit analysis of dam removal. Consider the needs of other uses or values (historical, water supply). Investigate other options to solve issues (i.e., fish passages, etc.).

Issue 14 Pollution; Agricultural and forestry effluents; Herbicides and pesticides:

Rank: 1.8

Negative impacts to habitats and wildlife from pesticides used during agricultural and forestry operations.

Action 1 Outreach; Partner stakeholder engagement: Rank: 1.3

Work with the Delaware Department of Agriculture and the agricultural community to promote implementation of IPM to minimize impacts of agricultural pesticides on SGCN. Work also with landowner incentive programs to develop incentives for IPM implementation on farmland.

Issue 15 Resource management needs; Management decision needs:

Rank: 2.0

Habitat/Wildlife management.

Action 1 Outreach; Partner stakeholder engagement: Rank: 1.2

Encourage Federal and NGO conservation land managers to adapt species and habitat management to increase key habitat patch size and reduce edge effects on SGCN.

Action 2 Outreach; Partner stakeholder engagement: Rank: 1.8

Evaluate means of managing for SGCN and key habitats on private property, including education and outreach, voluntary guidelines, incentives and regulations, as necessary.

Issue 16 Transportation and service corridors; Roads and railroads:

Rank: 2.2

Negative impacts to habitats and wildlife from road salt.

Action 1 Data Collection and Analysis: Rank: 1.2

Work with the Delaware Department of Transportation to assess and monitor impacts to SGCN from road salt, adapt salt application practices as practicable for SGCN conservation, and evaluate alternatives to salt use as necessary.

Issue 17 Transportation and service corridors:

Rank: 2.5

Negative impacts of commercial ships and boats on key habitats and SGCN.

Action 1 Law Enforcement; Law Enforcement; Law Enforcement: Rank: 1.2

Post and enforce "no wake" zones to protect key habitats.

Action 2 Outreach; Recruitment and retention activities; For fishing and boating (SFR outreach and communications): Rank: 1.3

Work with the shipping and commercial fishing industries to develop education and outreach for boat operators about minimizing impacts to key habitats and SGCN.

Issue 18 Resource management needs; Management decision needs:

Rank: 2.8

Impacts of facility and program operations on key habitats (i.e. mowing, maintenance, etc.).

Action 1 Outreach; Partner stakeholder engagement: Rank: 1.2

Encourage Federal and NGO conservation land managers to develop policies for minimizing impacts from facility and program operations to key habitats and SGCN.

Action 2 Technical Assistance; Environmental review; Review of proposed policies and plans: Rank: 1.7

Review facility and program operations on state conservation lands - Wildlife Areas, Parks and Forests - and develop state policies for minimizing impacts to key habitats and SGCN. Establish MOUs with DPR and the State Forest Service about consultation with DFW on issues impacting key habitats and SGCN in State Parks and State Forests.

Issue 19 Biological resource use; Fishing and harvesting aquatic resources; Intentional use:

Rank: 3.0

Negative impacts to habitats, SGCN, and other wildlife due to inappropriate hunting and fishing.

Action 1 Education; Student training; Aquatic resource education: Rank: 1.2

Incorporate information about SGCN conservation into the Fishing Guide.

Action 2 Coordination and Administration; Coordination and Administration; Program/project administrative support: Rank: 1.2

Integrate SGCN conservation into fishing regulations.

Action 3 Coordination and Administration; Coordination and Administration: Rank: 1.2

Maintain compliance with interstate management agreements.

Action 4 Law Enforcement; Law Enforcement; Law Enforcement: Rank: 1.7

Strengthen enforcement of existing recreational and commercial fishing regulations.

Coastal Plain Small and Medium River

Issue 1 Natural system modifications; Other ecosystem modifications:

Rank: 1.3

Negative impacts to habitats and wildlife due to artificial shoreline hardening from shoreline protection practices.

Action 1 Outreach; Partner stakeholder engagement; Others:

Rank: 1.2

Work with the Division of Watershed Stewardship to develop education and outreach, incentives, partnerships and/or regulations as necessary to include private landowners in beach renourishment projects, in place of installing bulkheads and revetments, to minimize impacts to key habitats.

Issue 2 Pollution; Agricultural and forestry effluents; Herbicides and pesticides:

Rank: 1.8

Negative impacts due to pesticides from agriculture and forestry practices.

Action 1 Outreach; Partner stakeholder engagement:

Rank: 1.3

Work with the Delaware Department of Agriculture and the agricultural community to promote implementation of IPM to minimize impacts of agricultural pesticides on SGCN. Work also with landowner incentive programs to develop incentives for IPM implementation on farmland.

Habitat Category: Uplands

Habitat Group: Agricultural

Habitat Types:

Vegetables

Turf

Row Crops

Planted Warm Season Grasses

Pasture

Orchard/Nursery

Hay

Fallow

Buffers/Filter Strips

Issue and Actions:

Issue 1 Education Outreach needs; Outreach needs; Need to develop and/or maintain a broad base of support for agency goals and objectives:

Rank: 2.0

Action 1 Coordination and Administration:

Rank: 1.8

Work with Natural Resources Conservation service to increase enrollment in NRCS conservation programs.

Issue 2 Agriculture and aquaculture; Annual and perennial nontimber crops; Scale unknown:

Rank: 2.0

Agricultural harvesting practices.

Action 1 Coordination and Administration; Incentives:

Rank: 1.8

Work with the Delaware Department of Agriculture and the agricultural community to provide incentives for private landowners to modify harvest methods and timing to minimize impacts to SGCN.

Habitat Group: Modified Uplands

Habitat Types:

Developed

Spruce Plantation

Piedmont Modified / Successional Forests

Conifer Plantation

Coastal Plain Modified / Successional Forests

Issue and Actions:

Coastal Plain Modified / Successional Forests

Issue 1 Agriculture and aquaculture:

Rank: 1.5

Agriculture causing early successional habitat conversion.

Action 1 Direct Management of Natural Resources:

Rank: 1.3

Promote restoration of native grasslands utilizing selective herbicides and prescribed burning.

Developed

Issue 1 Education Outreach needs; Education needs; Need for improved knowledge of fish and wildlife and their habitats:

Rank: 1.8

Need for increased function of residential and commercial areas serving as wildlife habitat.

Action 1 Education:

Rank: 1.5

Work with Delaware Nature Society and the National Wildlife Federation to increase enrollment in the Backyard Wildlife Habitat Certification Program.

Piedmont Modified / Successional Forests

Issue 1 Climate change and severe weather; Sea level rise:

Rank: 1.3

High percentage of forest lost to salt water intrusion or fragmentation.

Action 1 Direct Management of Natural Resources:

Rank: 1.5

Reestablish forest lost to salt water intrusion or fragmentation.

Issue 2 Agriculture and aquaculture:

Rank: 1.3

Agriculture causing early successional habitat conversion.

Action 1 Direct Management of Natural Resources:

Rank: 1.3

Promote restoration of native grasslands utilizing selective herbicides and prescribed burning.

Habitat Group: Natural Forested Uplands

Habitat Types: *Inland Xeric Sand Forest*

Piedmont Oak Forest

Mesic Mixed Hardwood Forest

Maritime Forest and Shrubland

Coastal Plain Oak-Pine Forest

Basic Mesic Forest

Issue and Actions:

Issue 1	Invasive and other problematic species genes and diseases; Problematic native species diseases:	Rank: 1.1
	Uncontrolled native species (overabundance of white-tailed deer, Bacterial leaf scorch, southern pine beetle, etc.).	
<i>Action 1</i>	<i>Direct Management of Natural Resources:</i> <i>Encourage federal, NGO, county, and municipal conservation land managers to increase deer harvest as necessary to reduce impacts to key habitats.</i>	<i>Rank: 1.1</i>
<i>Action 2</i>	<i>Direct Management of Natural Resources:</i> <i>Manage deer populations on state lands to reduce populations to ecologically sustainable levels that will reduce impact to SGCN and key habitats.</i>	<i>Rank: 1.1</i>
<i>Action 3</i>	<i>Direct Management of Natural Resources:</i> <i>Allow non-farm private landowners to apply for deer damage permit for SGCN and key habitat management.</i>	<i>Rank: 1.6</i>
Issue 2	Education Outreach needs; Education needs:	Rank: 1.2
	Delawareans general lack of knowledge/appreciation of forests.	
<i>Action 1</i>	<i>Education:</i> <i>Raise public awareness and understanding of forest and forest management.</i>	<i>Rank: 1.2</i>
Issue 3	Invasive and other problematic species genes and diseases; Invasive non native alien species diseases:	Rank: 1.2
	Exotic invasive species (emerald ash borer, Asian longhorned beetle, European pine shoot borer, Sirex woodwasp, Sudden Oak Death, Norway maple, mile-a-minute weed, autumn olive, phragmites, privet, etc.).	
<i>Action 1</i>	<i>Direct Management of Natural Resources; Invasive species control:</i> <i>Maintain and increase control efforts for invasive species based upon impact priority.</i>	<i>Rank: 1.2</i>
<i>Action 2</i>	<i>Direct Management of Natural Resources; Invasive species control:</i> <i>Work with the Delaware Invasive Species Council and conservation land managers to assess and monitor impacts of invasive species using the Delaware Alien Plant Invasiveness Risk Assessment protocol, and prioritize control efforts based on degree of risk.</i>	<i>Rank: 1.2</i>

Issue 4 Residential and commercial development:

Rank: 1.2

Habitat loss and fragmentation - Residential and commercial structures.

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| <i>Action 1</i> | <i>Land and Water Rights Acquisition and Protection; Land acquisition:</i>

<i>Coordinate with partners to acquire title to, or easements on, sites that are critical to the conservation of key habitats and SGCN for management by public agencies or NGOs.</i> | <i>Rank: 1.2</i> |
| <i>Action 2</i> | <i>Technical Assistance; Environmental review; Review of proposed projects:</i>

<i>Improve federal/state/local coordination of environmental reviews to ensure that potential impacts to key habitats and SGCN are minimized for all major projects.</i> | <i>Rank: 1.5</i> |
| <i>Action 3</i> | <i>Coordination and Administration; Coordination and Administration; Agency administrative support:</i>

<i>Support rigorous implementation of the State Strategies for Policies and Spending to restrict major development to Levels 1-3.</i> | <i>Rank: 1.5</i> |
| <i>Action 4</i> | <i>Planning; Land use planning:</i>

<i>Develop state policies to require incorporation of Key Wildlife Habitats into plans and planning (including the DEN).</i> | <i>Rank: 1.8</i> |
| <i>Action 5</i> | <i>Planning; Land use planning:</i>

<i>Encourage all counties to adopt environmental design standards for development projects in order to protect key wildlife habitats and SGCN.</i> | <i>Rank: 1.8</i> |
| <i>Action 6</i> | <i>Planning; Land use planning:</i>

<i>Encourage Kent and Sussex counties to adopt overlay zoning ordinances for the DEN and/or green infrastructure.</i> | <i>Rank: 1.8</i> |
| <i>Action 7</i> | <i>Planning; Organizational strategic and CMS planning; Organizational strategic and operational planning:</i>

<i>Evaluate means of protecting forested key habitats on private property, including education and outreach, voluntary guideline, incentives and regulations, as necessary.</i> | <i>Rank: 2.0</i> |
| <i>Action 8</i> | <i>Planning; Organizational strategic and CMS planning; Organizational strategic and operational planning:</i>

<i>Evaluate means of protecting isolated freshwater wetland key habitats on private property, including education and outreach, voluntary guideline, incentives and regulations, as necessary.</i> | <i>Rank: 2.0</i> |

	<p><i>Action 9 Outreach; Partner stakeholder engagement:</i></p> <p><i>Work with conservation partners, state and county planning officials, and developers to create certification for environmentally-friendly developments, including an associated media campaign with awards.</i></p>	Rank: 2.0
Issue 5	Climate change and severe weather; Sea level rise:	Rank: 1.3
	<p><i>Action 1 Planning; Species and habitat management planning:</i></p> <p><i>Incorporate sea level rise scenarios in all relevant area, habitat and species management plans.</i></p>	Rank: 1.2
	<p><i>Action 2 Coordination and Administration; Coordination and Administration; Program/project administrative support:</i></p> <p><i>Support implementation of actions to address climate change, as appropriate, to reduce greenhouse gas emissions and increase carbon sequestration.</i></p>	Rank: 1.5
	<p><i>Action 3 Coordination and Administration; Coordination and Administration; Agency administrative support:</i></p> <p><i>Work with the Division of Watershed Stewardship to integrate key habitat and SGCN conservation into long-range planning for sea level rise.</i></p>	Rank: 1.8
Issue 6	Agriculture and aquaculture:	Rank: 1.3
	Habitat loss and fragmentation - Farmland.	
	<p><i>Action 1 Land and Water Rights Acquisition and Protection; Land acquisition:</i></p> <p><i>Coordinate with partners to acquire title to, or easements on, sites that are critical to the conservation of key habitats and SGCN for management by public agencies or NGOs.</i></p>	Rank: 1.2
	<p><i>Action 2 Direct Management of Natural Resources; Create new habitat or natural processes:</i></p> <p><i>Restore additional upland forest acreage through afforestation and reforestation of unforested sites (not to address future need).</i></p>	Rank: 1.5
	<p><i>Action 3 Planning; Organizational strategic and CMS planning; Organizational strategic and operational planning:</i></p> <p><i>Evaluate means of protecting forested key habitats on private property, including education and outreach, voluntary guideline, incentives and regulations, as necessary.</i></p>	Rank: 1.8

	<p><i>Action 4 Planning; Organizational strategic and CMS planning; Organizational strategic and operational planning:</i></p> <p><i>Evaluate means of protecting isolated natural forested uplands key habitats on private property, including education and outreach, voluntary guideline, incentives and regulations, as necessary.</i></p>	Rank: 1.8
	<p><i>Action 5 Coordination and Administration; Incentives:</i></p> <p><i>Work with the Delaware Department of Agriculture, the agriculture industry and the Landowners Incentives Program to develop BMPs, and the corresponding incentives, that minimize impacts to key habitats, preserve and restore buffers, and reduce edge effects for area-sensitive SGCN.</i></p>	Rank: 1.8
Issue 7	<p>Agriculture and aquaculture:</p> <p>Habitat loss and fragmentation.</p>	Rank: 1.3
	<p><i>Action 1 Direct Management of Natural Resources; Create new habitat or natural processes:</i></p> <p><i>Restore additional upland forest acreage through afforestation and reforestation of unforested sites (not to address future need).</i></p>	Rank: 1.5
Issue 8	<p>Climate change and severe weather; Sea level rise:</p> <p>High percentage of forest lost to salt water intrusion or fragmentation.</p>	Rank: 1.3
	<p><i>Action 1 Direct Management of Natural Resources; Create new habitat or natural processes:</i></p> <p><i>Restore additional upland forest acreage through afforestation and reforestation of unforested sites (not to address future need).</i></p>	Rank: 1.5
Issue 9	<p>Education Outreach needs; Outreach needs; Need to develop and/or maintain a broad base of support for agency goals and objectives:</p> <p>Residential and commercial development practices - Residential and commercial structures.</p>	Rank: 1.3
	<p><i>Action 1 Outreach; Partner stakeholder engagement; Others:</i></p> <p><i>Evaluate mechanisms for protecting key upland forest habitats on private property by means of education and outreach, partnerships, voluntary guidelines, incentives and/or regulations, as necessary.</i></p>	Rank: 2.0
Issue 10	<p>Natural system modifications; Fire and fire suppression; Suppression of fire frequency/intensity:</p> <p>Changes in fire regimes - Fire suppression.</p>	Rank: 1.5
	<p><i>Action 1 Education; Educator/instructor training:</i></p> <p><i>Provide staff training on prescribed burning practices for upland forests.</i></p>	Rank: 1.0

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| Action 2 | <i>Direct Management of Natural Resources; Fire management; Prescribed burning:

Integrate prescribed burning into management of upland forests as appropriate.</i> | Rank: 1.5 |
| Action 3 | <i>Outreach; Partner stakeholder engagement; Others:

Develop education and outreach for landowners adjacent to areas targeted for burning.</i> | Rank: 1.7 |
| Action 4 | <i>Coordination and Administration; Coordination and Administration:

Evaluate the need for an inter-agency "burn team" to leverage resources and expertise.</i> | Rank: 1.7 |
| Action 5 | <i>Coordination and Administration; Incentives:

Provide incentives and/or technical support for private landowners to conduct prescribed burns of upland forests.</i> | Rank: 2.3 |

Issue 11 Transportation and service corridors; Utility and service lines:

Rank: 1.5

Habitat loss and fragmentation - Utility Corridors.

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| Action 1 | <i>Planning; Land use planning:

Work with utilities and state and local planning officials to integrate key habitat and SGCN conservation into long-range planning for electric, water, sewer, natural gas and petroleum lines.</i> | Rank: 2.0 |
| Action 2 | <i>Coordination and Administration; Coordination and Administration; Agency administrative support:

Work with utilities to develop BMPs to integrate key habitat and SGCN conservation into corridor maintenance, including controlling invasive species, preserving and restoring buffers and reducing edge effects.</i> | Rank: 2.0 |

Issue 12 Biological resource use; Logging and wood harvesting:

Rank: 1.7

Clearcutting and other forestry practices.

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| Action 1 | <i>Land and Water Rights Acquisition and Protection; Land acquisition:

Coordinate with partners to acquire title to, or easements on, sites that are critical to the conservation of key habitats and SGCN for management by public agencies or NGOs.</i> | Rank: 1.7 |
| Action 2 | <i>Coordination and Administration; Coordination and Administration; Agency administrative support:

Encourage the Delaware Department of Agriculture to revise the scoring system of the Agricultural Lands Preservation Act to give increased weight to conservation of key habitats and SGCN.</i> | Rank: 1.7 |

- Action 3 Planning; Species and habitat management planning; Habitat management planning: Rank: 1.7*
Work with the Delaware Forest Service to integrate key habitat and SGCN conservation into forest management planning.
- Action 4 Outreach; Partner stakeholder engagement: Rank: 1.8*
Work with the Delaware Forest Service and the forestry industry to implement a Master Logger program to encourage landowners to work with loggers who harvest forests sustainably.
- Action 5 Coordination and Administration; Incentives: Rank: 1.8*
Work with the Delaware Forest Service, the forestry industry and landowner incentive programs to develop BMPs and corresponding incentives to preserve or restore key habitat buffers and reduce edge effects for area-sensitive SGCN.
- Action 6 Planning; Species and habitat management planning; Habitat Conservation Plan (HCP) development: Rank: 2.2*
Develop and implement the Habitat Conservation Plan for Forests in Sussex County to mitigate loss, fragmentation and degradation of Coastal Plain Upland Forests.

Issue 13 Pollution; Garbage and solid waste:

Rank: 1.8

Habitat loss and fragmentation - Landfill facilities.

- Action 1 Coordination and Administration; Coordination and Administration; Agency administrative support: Rank: 1.5*
Support rigorous implementation of the State Strategies for Policies and Spending to restrict major development to Levels 1-3, where it applies to landfill facilities.

Issue 14 Residential and commercial development; Commercial and industrial areas:

Rank: 2.0

Habitat loss and fragmentation - Industrial facilities.

- Action 1 Coordination and Administration; Coordination and Administration; Agency administrative support: Rank: 1.5*
Support rigorous implementation of the State Strategies for Policies and Spending to restrict major development to Levels 1-3.
- Action 2 Outreach; Partner stakeholder engagement; Others: Rank: 2.0*
Work with landowners on protecting and restoring key habitats and SGCN on private industrial lands.

Action 3	<i>Outreach; Partner stakeholder engagement; Others:</i> <i>Evaluate the use of education and outreach, incentives, partnerships, and/or regulations, as necessary, for restoring key habitats and SGCN on closed sand and gravel quarries.</i>	Rank: 2.5
Issue 15 Transportation and service corridors; Roads and railroads:		Rank: 2.0
Habitat loss and fragmentation -Transportation Infrastructure.		
Action 1	<i>Coordination and Administration; Coordination and Administration; Agency administrative support:</i> <i>Work with the Delaware Department of Transportation to integrate key habitat and SGCN conservation into wetland and forest mitigation.</i>	Rank: 1.8
Action 2	<i>Coordination and Administration; Coordination and Administration; Agency administrative support:</i> <i>Work with the Delaware Department of Transportation to develop BMPs to integrate key habitat and SGCN conservation into landscaping, mowing, invasive plant control and other road maintenance, including preserving and restoring buffers and reducing edge effects.</i>	Rank: 2.0
Action 3	<i>Planning; Land use planning:</i> <i>Work with the Delaware Department of Transportation to integrate key habitat and SGCN conservation into long-range transportation planning.</i>	Rank: 2.0
Issue 16 Agriculture and aquaculture:		Rank: 2.0
High percentage of forest lost to salt water intrusion or fragmentation.		
Action 1	<i>Direct Management of Natural Resources:</i> <i>Reestablish forest lost to salt water intrusion or fragmentation.</i>	Rank: 2.5
Issue 17 Resource management needs; Management decision needs:		Rank: 2.2
Habitat/Wildlife management.		
Action 1	<i>Outreach; Partner stakeholder engagement:</i> <i>Encourage Federal and NGO conservation land managers to adapt species and habitat management to increase key habitat patch size and reduce edge effects on SGCN.</i>	Rank: 1.7
Action 2	<i>Outreach; Partner stakeholder engagement:</i> <i>Evaluate means of managing for SGCN and key habitats on private property, including education and outreach, voluntary guidelines, incentives and regulations, as necessary.</i>	Rank: 2.0

Issue 18 Biological resource use; Hunting and collecting terrestrial animals; Intentional use: Rank: 2.2

Inappropriate hunting and fishing.

Action 1 Law Enforcement; Law Enforcement; Law Enforcement: Rank: 1.3
Maintain compliance with federal regulations.

Action 2 Law Enforcement; Law Enforcement; Law Enforcement: Rank: 1.5
Strengthen enforcement of existing hunting and trapping regulations.

Action 3 Education; Student training; Wildlife education: Rank: 1.8
Incorporate information about SGCN conservation into the Hunting and Trapping Guide.

Action 4 Coordination and Administration; Coordination and Administration; Agency administrative support: Rank: 1.8
Integrate SGCN conservation into hunting and trapping regulations.

Issue 19 Resource management needs; Resource information collection needs: Rank: 2.4

Lack of coordination of forest stand inventory and harvest regimes with other states (specifically Maryland).

Action 1 Data Collection and Analysis: Rank: 2.0
Improve and refine the state's forest inventory and coordinate with surrounding states when developing forest markets.

THIS NEEDS TO BE REVIEWED BY DFS!

Issue 20 Resource management needs; Management decision needs: Rank: 2.8

Facility and Program Operations.

Action 1 Outreach; Partner stakeholder engagement: Rank: 1.3
Encourage Federal and NGO conservation land managers to develop policies for minimizing impacts from facility and program operations to key habitats and SGCN.

Action 2 Technical Assistance; Environmental review; Review of proposed policies and plans: Rank: 1.7
Review facility and program operations on state conservation lands - Wildlife Areas, Parks and Forests - and develop state policies for minimizing impacts to key habitats and SGCN. Establish MOUs with DPR and the State Forest Service about consultation with DFW on issues impacting key habitats and SGCN in State Parks and State Forests.

Coastal Plain Oak-Pine Forest

- Issue 1 Climate change and severe weather; Sea level rise:** Rank: 1.3
High percentage of forest lost to salt water intrusion or fragmentation.
- Action 1 Direct Management of Natural Resources: Rank: 1.5*
Reestablish forest lost to salt water intrusion or fragmentation.
- Issue 2 Climate change and severe weather; Habitat shifting or alteration:** Rank: 2.0
High percentage of forest lost to salt water intrusion or fragmentation.
- Action 1 Direct Management of Natural Resources: Rank: 2.5*
Reestablish forest lost to salt water intrusion or fragmentation.
- Issue 3 Human intrusions and disturbance; Recreational activities:** Rank: 2.0
Recreation use on foot and with boats, Personal Watercraft and Off-Road Vehicles, horses (including effects of horse excrement), and bikes.
- Action 1 Data Collection and Analysis; Research survey or Rank: 2.2*
monitoring habitat; Monitoring:
Assess the impacts of ORVs on beach and dune, early successional and forested habitats, and use this assessment and long-term monitoring to adapt management as necessary.
- Issue 4 Energy production and mining; Renewable energy:** Rank: 2.2
Energy production - Wind farm facilities.
- Action 1 Outreach; Partner stakeholder engagement; Others: Rank: 2.2*
Work with energy companies to develop standards for the location of wind farms to minimize loss and fragmentation of key habitats.

Maritime Forest and Shrubland

- Issue 1 Climate change and severe weather; Sea level rise:** Rank: 1.3
High percentage of forest lost to salt water intrusion or fragmentation.
- Action 1 Direct Management of Natural Resources: Rank: 1.5*
Reestablish forest lost to salt water intrusion or fragmentation.
- Issue 2 Climate change and severe weather; Habitat shifting or alteration:** Rank: 2.0
High percentage of forest lost to salt water intrusion or fragmentation.
- Action 1 Direct Management of Natural Resources: Rank: 2.5*
Reestablish forest lost to salt water intrusion or fragmentation.

Habitat Group: Natural Unforested Uplands

Habitat Types: *Unvegetated Sandy Beach*
 Serpentine Barren
 Maritime Dune and Grassland
 Early Successional

Issue and Actions:

Issue 1	Residential and commercial development:	Rank: 1.5
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Habitat loss and fragmentation - Residential and commercial structures.

<i>Action 1</i>	<i>Land and Water Rights Acquisition and Protection; Land acquisition:</i>	<i>Rank: 1.7</i>
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Coordinate with partners to acquire title to, or easements on, sites that are critical to the conservation of key habitats and SGCN for management by public agencies or NGOs.

<i>Action 2</i>	<i>Planning; Land use planning:</i>	<i>Rank: 1.7</i>
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Encourage all counties to adopt environmental design standards for development projects in order to protect key wildlife habitats and SGCN.

<i>Action 3</i>	<i>Planning; Land use planning:</i>	<i>Rank: 1.7</i>
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Encourage Kent and Sussex counties to adopt overlay zoning ordinances for the DEN and/or green infrastructure.

<i>Action 4</i>	<i>Technical Assistance; Environmental review; Review of proposed projects:</i>	<i>Rank: 1.7</i>
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Improve federal/state/local coordination of environmental reviews to ensure that potential impacts to key habitats and SGCN are minimized for all major projects.

<i>Action 5</i>	<i>Coordination and Administration; Coordination and Administration; Agency administrative support:</i>	<i>Rank: 1.7</i>
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Support rigorous implementation of the State Strategies for Policies and Spending to restrict major development to Levels 1-3, where appropriate for residential and commercial development.

<i>Action 6</i>	<i>Outreach; Partner stakeholder engagement:</i>	<i>Rank: 1.7</i>
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Work with conservation partners, state and county planning officials, and developers to create certification for environmentally-friendly developments, including an associated media campaign with awards.

	<p><i>Action 7 Planning; Organizational strategic and CMS planning; Organizational strategic and operational planning:</i></p> <p><i>Evaluate means of protecting unforested upland key habitats on private property, including education and outreach, voluntary guideline, incentives and regulations, as necessary.</i></p>	Rank: 1.8
Issue 2	<p>Invasive and other problematic species genes and diseases; Invasive non native alien species diseases; Unspecified species:</p> <p>Invasive Plants.</p> <p><i>Action 1 Outreach; Partner stakeholder engagement:</i></p> <p><i>Partner with the Delaware Invasive Species Council and land management agencies to integrate key habitat and SGCN conservation into invasives control practices.</i></p>	Rank: 1.5
Issue 3	<p>Natural system modifications; Other ecosystem modifications:</p> <p>Habitat loss and fragmentation - Dredge spoil disposal.</p> <p><i>Action 1 Direct Management of Natural Resources; Create new habitat or natural processes:</i></p> <p><i>Work with the Division of Watershed Stewardship and the US Army Corps of Engineers to identify sites for beneficial reuse of dredge spoils to create/restore key habitats, incorporate key habitat and SGCN conservation into spoil disposal plans, and mitigate contaminant impacts to SGCN.</i></p>	Rank: 2.0
Issue 4	<p>Resource management needs; Management decision needs:</p> <p>Resource management - Facility and Program Operations.</p> <p><i>Action 1 Outreach; Partner stakeholder engagement:</i></p> <p><i>Encourage Federal and NGO conservation land managers to develop policies for minimizing impacts from facility and program operations to key habitats and SGCN.</i></p> <p><i>Action 2 Technical Assistance; Environmental review; Review of proposed policies and plans:</i></p> <p><i>Review facility and program operations on state conservation lands - Wildlife Areas, Parks and Forests - and develop state policies for minimizing impacts to key habitats and SGCN. Establish MOUs with DPR and the State Forest Service about consultation with DFW on issues impacting key habitats and SGCN in State Parks and State Forests.</i></p>	Rank: 2.7

Early Successional

Issue 1 Natural system modifications; Fire and fire suppression; Suppression of fire frequency/intensity:

Rank: 1.2

Changes in fire regimes - Fire suppression.

Action 1 Education; Educator/instructor training: Rank: 1.2

Provide staff training on prescribed burning practices for early successional habitats.

Action 2 Direct Management of Natural Resources; Fire management; Prescribed burning: Rank: 1.5

Increase prescribed fire management of early successional habitats where suitable to benefit SGCN, while providing refugia for fire-susceptible species.

Action 3 Outreach; Partner stakeholder engagement: Rank: 1.7

Develop education and outreach for land managers and landowners adjacent to areas targeted for burning.

Action 4 Coordination and Administration; Coordination and Administration: Rank: 1.7

Evaluate the need for an inter-agency "burn team" to leverage resources and expertise.

Action 5 Coordination and Administration; Incentives: Rank: 1.8

Provide incentives and/or technical support for private landowners to conduct prescribed burns of early successional habitats.

Issue 2 Agriculture and aquaculture:

Rank: 1.3

Habitat loss and fragmentation - Farmland.

Action 1 Direct Management of Natural Resources; Create new habitat or natural processes: Rank: 1.5

Restore and enhance additional upland early successional habitat acreage.

Action 2 Coordination and Administration; Coordination and Administration; Agency administrative support: Rank: 1.5

Support the Agricultural Lands Preservation Program to protect land from irreversible conversion to other uses.

Action 3 Land and Water Rights Acquisition and Protection; Land acquisition: Rank: 1.7

Coordinate with partners to acquire title to, or easements on, sites that are critical to the conservation of key habitats and SGCN for management by public agencies or NGOs.

	<p>Action 4 <i>Coordination and Administration; Incentives:</i></p> <p><i>Work with the Delaware Department of Agriculture, the agriculture industry and the Landowners Incentives Program to develop BMPs, and the corresponding incentives, that minimize impacts to key habitats, preserve and restore buffers, and reduce edge effects for area-sensitive SGCN.</i></p>	<p>Rank: 1.7</p>
Issue 3	<p>Transportation and service corridors; Utility and service lines:</p> <p>Frequent/intense mechanical and chemical vegetation management degrading early successional habitats on ROWs.</p>	<p>Rank: 1.5</p>
	<p>Action 1 <i>Direct Management of Natural Resources; Fire management:</i></p> <p><i>Use light-handed 2-3+ year cycle/approach for prescribed burns of service corridors. Require BMPs.</i></p>	<p>Rank: 1.5</p>
Issue 4	<p>Residential and commercial development:</p> <p>Habitat loss and fragmentation - Residential and commercial structures.</p> <p>Action 1 <i>Direct Management of Natural Resources; Create new habitat or natural processes:</i></p> <p><i>Restore and enhance additional upland early successional habitat acreage.</i></p>	<p>Rank: 1.5</p>
Issue 5	<p>Resource management needs; Management decision needs:</p> <p>Resource management - Habitat/Wildlife Management.</p> <p>Action 1 <i>Outreach; Partner stakeholder engagement:</i></p> <p><i>Encourage Federal and NGO conservation land managers to adapt species and habitat management to increase key habitat patch size and reduce edge effects on SGCN.</i></p> <p>Action 2 <i>Outreach; Partner stakeholder engagement:</i></p> <p><i>Evaluate means of managing for SGCN and key habitats on private property, including education and outreach, voluntary guidelines, incentives and regulations, as necessary.</i></p>	<p>Rank: 1.5</p>
Issue 6	<p>Transportation and service corridors; Flight paths:</p> <p>Airport operations - Bird strike hazard management.</p> <p>Action 1 <i>Outreach; Partner stakeholder engagement:</i></p> <p><i>Work with airports to integrate early successional habitat into bird strike management.</i></p>	<p>Rank: 1.7</p>

Issue 7	Invasive and other problematic species genes and diseases; Invasive non native alien species diseases:	Rank: 1.7
	Non-native grasses preventing SGCN use of early successional habitats.	
<i>Action 1</i>	<i>Direct Management of Natural Resources; Planting seeding: Plant suitable native grass/forb mixes for SGCN habitat restoration on early successional sites and follow suitable management practices.</i>	<i>Rank: 1.5</i>
Issue 8	Residential and commercial development; Commercial and industrial areas:	Rank: 1.7
	Habitat loss and fragmentation - Industrial facilities.	
<i>Action 1</i>	<i>Outreach; Partner stakeholder engagement; Others: Evaluate the use of education and outreach, incentives, partnerships, and/or regulations, as necessary, to encourage early successional habitats on industrial lands.</i>	<i>Rank: 2.0</i>
<i>Action 2</i>	<i>Coordination and Administration; Coordination and Administration; Agency administrative support: Support rigorous implementation of the State Strategies for Policies and Spending to restrict major development to Levels 1-3, where it applies to industrial facility development.</i>	<i>Rank: 2.0</i>
Issue 9	Transportation and service corridors; Roads and railroads:	Rank: 1.7
	Habitat loss and fragmentation -Transportation Infrastructure.	
<i>Action 1</i>	<i>Coordination and Administration; Coordination and Administration; Agency administrative support: Work with the Delaware Department of Transportation to develop BMPs to integrate key habitat and SGCN conservation into landscaping, mowing, invasive plant control and other road maintenance, including preserving and restoring buffers and reducing edge effects.</i>	<i>Rank: 1.5</i>
<i>Action 2</i>	<i>Planning; Land use planning: Work with the Delaware Department of Transportation to integrate key habitat and SGCN conservation into long-range transportation planning.</i>	<i>Rank: 1.5</i>
Issue 10	Transportation and service corridors; Utility and service lines:	Rank: 2.0
	Habitat loss and fragmentation - Utility Corridors.	
<i>Action 1</i>	<i>Planning; Land use planning: Work with utilities and state and local planning officials to integrate key habitat and SGCN conservation into long-range planning for electric, water, sewer, natural gas and petroleum lines.</i>	<i>Rank: 1.7</i>

Action 2	<i>Coordination and Administration; Coordination and Administration; Agency administrative support:</i> <i>Work with utilities to develop BMPs to integrate key habitat and SGCN conservation into corridor maintenance, including controlling invasive species, preserving and restoring buffers and reducing edge effects.</i>	Rank: 1.7
Issue 11 Pollution; Garbage and solid waste:		Rank: 2.3
Habitat loss and fragmentation - Landfill facilities.		
Action 1	<i>Coordination and Administration; Coordination and Administration; Agency administrative support:</i> <i>Support rigorous implementation of the State Strategies for Policies and Spending to restrict major development to Levels 1-3.</i>	Rank: 1.5
Issue 12 Transportation and service corridors; Utility and service lines:		Rank: 2.5
Frequent/intense mechanical and chemical vegetation management degrading early successional habitats on ROWs.		
Action 1	<i>Coordination and Administration; Coordination and Administration; Agency administrative support:</i> <i>Work with utilities, municipalities, and DelDOT to establish and follow BMPs for vegetation management.</i>	Rank: 1.5
Issue 13 Education Outreach needs; Outreach needs:		Rank: 2.8
Changes in fire regimes - Firefighting practices.		
Action 1	<i>Direct Management of Natural Resources; Fire management; Prescribed burning:</i> <i>Work with the Delaware State Fire School to integrate conservation of key habitats and SGCN into practices for fighting wildfires.</i>	Rank: 1.8
Issue 14 Biological resource use; Hunting and collecting terrestrial animals; Intentional use:		Rank: 2.8
Wildlife harvesting - Inappropriate hunting and fishing.		
Action 1	<i>Education; Student training; Wildlife education:</i> <i>Incorporate information about SGCN conservation into the Hunting and Trapping Guide.</i>	Rank: 1.7
Action 2	<i>Coordination and Administration; Coordination and Administration; Program/project administrative support:</i> <i>Integrate SGCN conservation into hunting and trapping regulations.</i>	Rank: 1.7
Action 3	<i>Law Enforcement; Law Enforcement; Law Enforcement:</i> <i>Maintain compliance with federal regulations.</i>	Rank: 1.7

<i>Action 4</i>	<i>Law Enforcement; Law Enforcement; Law Enforcement: Strengthen enforcement of existing hunting and trapping regulations.</i>	<i>Rank: 1.7</i>
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Maritime Dune and Grassland

Issue 1	Climate change and severe weather; Sea level rise:	Rank: 1.2
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<i>Action 1</i>	<i>Planning; Species and habitat management planning: Incorporate sea level rise scenarios in all relevant area, habitat and species management plans.</i>	<i>Rank: 1.2</i>
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<i>Action 2</i>	<i>Coordination and Administration; Coordination and Administration; Program/project administrative support: Support implementation of actions to address climate change, as appropriate, to reduce greenhouse gas emissions and increase carbon sequestration.</i>	<i>Rank: 1.2</i>
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<i>Action 3</i>	<i>Coordination and Administration; Coordination and Administration; Agency administrative support: Work with the Division of Watershed Stewardship to integrate key habitat and SGCN conservation into long-range planning for sea level rise.</i>	<i>Rank: 1.2</i>
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Issue 2	Residential and commercial development:	Rank: 1.5
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Habitat loss and fragmentation - Residential and commercial structures.

<i>Action 1</i>	<i>Direct Management of Natural Resources: Work with appropriate agencies to restore coastal habitats.</i>	<i>Rank: 1.5</i>
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Issue 3	Natural system modifications; Fire and fire suppression:	Rank: 1.7
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<i>Action 1</i>	<i>Direct Management of Natural Resources; Fire management; Prescribed burning: Research prescribed burning for use as a management tool.</i>	<i>Rank: 1.7</i>
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Issue 4	Natural system modifications; Other ecosystem modifications:	Rank: 1.8
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Shoreline protection practices - Artificial shoreline hardening.

<i>Action 1</i>	<i>Outreach; Partner stakeholder engagement; Others: Work with the Division of Watershed Stewardship to develop education and outreach, incentives, partnerships and/or regulations as necessary to include private landowners in beach renourishment projects, in place of installing bulkheads and revetments, to minimize impacts to key habitats.</i>	<i>Rank: 1.8</i>
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Issue 5	Natural system modifications; Other ecosystem modifications:	Rank: 1.8
	Shoreline protection practices - Beach renourishment.	
<i>Action 1</i>	<i>Planning; Species and habitat management planning; Habitat management planning:</i> <i>Work with the Division of Watershed Stewardship to develop state policies for the timing of beach renourishment, and standards for composition and placement of materials, to minimize short-term impacts to nesting sites, roosts and other critical areas.</i>	<i>Rank: 1.8</i>
Issue 6	Natural system modifications; Other ecosystem modifications:	Rank: 1.8
	Shoreline protection practices - Dune construction/stabilization.	
<i>Action 1</i>	<i>Planning; Species and habitat management planning; Habitat management planning:</i> <i>Work with the Division of Watershed Stewardship to assess needs of beach-nesting birds for overwash habitat, and work with public and private landowners to adapt stabilization projects to allow for this need.</i>	<i>Rank: 2.0</i>
Issue 7	Transportation and service corridors; Flight paths:	Rank: 2.2
	Airport operations - Overflights.	
<i>Action 1</i>	<i>Data Collection and Analysis; Research survey or monitoring fish and wildlife populations:</i> <i>Continue/expand studies of disturbance of SGCN from overflights.</i>	<i>Rank: 1.7</i>
<i>Action 2</i>	<i>Coordination and Administration; Coordination and Administration:</i> <i>Work with Dover Air Force Base to mitigate disturbance.</i>	<i>Rank: 2.5</i>
Issue 8	Pollution; Industrial and military effluents; Type unknown:	Rank: 2.2
	Industrial operations - Accidental spills of toxins and sewage.	
<i>Action 1</i>	<i>Outreach; Partner stakeholder engagement:</i> <i>Develop/enhance partnerships with Tri-State Birds Rescue and other wildlife rehabilitators to improve emergency response.</i>	<i>Rank: 1.7</i>
<i>Action 2</i>	<i>Coordination and Administration; Coordination and Administration:</i> <i>Maintain DFW involvement in the Natural Resource Damage Assessment process.</i>	<i>Rank: 1.7</i>
<i>Action 3</i>	<i>Education; Educator/instructor training:</i> <i>Provide training for DFW staff, such as incident management, hazardous materials handling and wildlife rescue, to facilitate involvement in emergency response actions.</i>	<i>Rank: 1.7</i>

Action 4	<i>Coordination and Administration; Coordination and Administration; Program/project administrative support:</i> <i>Work with the all emergency responders to integrate key habitat and SGCN protection into emergency response planning.</i>	Rank: 1.7
Issue 9	Residential and commercial development; Housing and urban areas: Residential and commercial practices - Piers and docks.	Rank: 2.3
Action 1	<i>Outreach:</i> <i>Work with developers to create design standards for piers and docks that minimize habitat loss or fragmentation.</i>	Rank: 1.8
Action 2	<i>Outreach:</i> <i>Work with county building officials to encourage developers to construct community piers and docks in subdivisions, in place of individual structures.</i>	Rank: 2.0
Issue 10	Transportation and service corridors; Roads and railroads: Habitat loss and fragmentation -Transportation Infrastructure.	Rank: 2.5
Action 1	<i>Coordination and Administration; Coordination and Administration; Agency administrative support:</i> <i>Work with the Delaware Department of Transportation to develop BMPs to integrate key habitat and SGCN conservation into landscaping, mowing, invasive plant control and other road maintenance, including preserving and restoring buffers and reducing edge effects.</i>	Rank: 1.7
Action 2	<i>Planning; Land use planning:</i> <i>Work with the Delaware Department of Transportation to integrate key habitat and SGCN conservation into long-range transportation planning.</i>	Rank: 1.7
Action 3	<i>Coordination and Administration; Coordination and Administration; Agency administrative support:</i> <i>Work with the Delaware Department of Transportation to integrate key habitat and SGCN conservation into wetland and forest mitigation.</i>	Rank: 1.7
Issue 11	Invasive and other problematic species genes and diseases; Problematic native species diseases; Named species: White-tailed deer.	Rank: 2.5
Action 1	<i>Data Collection and Analysis; Research survey or monitoring habitat; Monitoring:</i> <i>Continue to evaluate Quality Deer Management as a long-term strategy for minimizing impacts to key habitats.</i>	Rank: 1.7

- Action 2 Outreach; Recruitment and retention activities; For hunting and shooting: Rank: 1.7*
Develop education and outreach encouraging landowners to increase deer harvest on private lands as necessary to reduce impacts to key habitats.
- Action 3 Outreach; Recruitment and retention activities; For hunting and shooting: Rank: 1.7*
Encourage federal and NGO conservation land managers to increase deer harvest as necessary to reduce impacts to key habitats.
- Action 4 Outreach; Recruitment and retention activities; For hunting and shooting: Rank: 1.7*
Work with hunters to increase deer harvest on state lands as necessary to reduce impacts to key habitats.

Issue 12 Transportation and service corridors; Utility and service lines:

Rank: 2.7

Habitat loss and fragmentation - Utility Corridors.

- Action 1 Planning; Land use planning: Rank: 1.7*
Work with utilities and state and local planning officials to integrate key habitat and SGCN conservation into long-range planning for electric, water, sewer, natural gas and petroleum lines.
- Action 2 Coordination and Administration; Coordination and Administration; Agency administrative support: Rank: 1.7*
Work with utilities to develop BMPs to integrate key habitat and SGCN conservation into corridor maintenance, including controlling invasive species, preserving and restoring buffers and reducing edge effects.

Issue 13 Residential and commercial development:

Rank: 2.7

Natural beach dynamics causing loss of spawning habitat.

- Action 1 Data Collection and Analysis: Rank: 2.2*
Research the potential cost/benefit of jetties for protecting spawning beaches from wave action.

Unvegetated Sandy Beach

Issue 1 Residential and commercial development:

Rank: 1.0

Shoreline hardening from residential development causing beach habitat degradation.

- Action 1 Direct Management of Natural Resources; Living shorelines: Rank: 1.7*

Issue 2 Climate change and severe weather; Sea level rise:

Rank: 1.7

Climate change - Sea Level Rise.

- Action 1 Coordination and Administration; Coordination and Administration; Agency administrative support: Rank: 1.7*
Work with the Division of Watershed Stewardship to integrate key habitat and SGCN conservation into long-range planning for sea level rise.
- Action 2 Coordination and Administration; Coordination and Administration; Program/project administrative support: Rank: 2.0*
Support implementation of actions to address climate change, as appropriate, to reduce greenhouse gas emissions and increase carbon sequestration.
- Action 3 Planning; Species and habitat management planning: Rank: 2.2*
Incorporate sea level rise scenarios in all relevant area, habitat and species management plans.

Issue 3 Natural system modifications; Other ecosystem modifications:

Rank: 1.8

Shoreline protection practices - Loss of natural beach dynamics from jetties and groins.

- Action 1 Direct Management of Natural Resources; Hazard or infrastructure removal; Shoreline armoring removal: Rank: 2.0*
Work with the Division of Watershed Stewardship to assess and monitor the environmental and economic costs and benefits of individual jetties and groins, and remove those that are ineffective or obsolete.
- Action 2 Coordination and Administration; Coordination and Administration; Agency administrative support: Rank: 2.2*
Work with the Division of Watershed Stewardship to develop a source of funding for using beach renourishment to mitigate the impacts of jetties and groins on key habitats.
- Action 3 Direct Management of Natural Resources; Create new habitat or natural processes: Rank: 2.3*
Work with the Division of Watershed Stewardship to identify new materials and methods that use jetties and groins to protect, create or restore key habitats.

Issue 4 Pollution; Garbage and solid waste:

Rank: 2.0

Beach cleanup activities (raking, events).

- Action 1 Outreach; Partner stakeholder engagement: Rank: 1.7*
Encourage municipalities to modify or suspend beach raking during nesting periods, peak migration and other critical times for SGCN.

	<p><i>Action 2 Planning:</i></p> <p><i>Schedule beach cleanup events to avoid nesting periods, peak migration and other critical times for SGCN.</i></p>	Rank: 1.7
	<p><i>Action 3 Planning; Species and habitat management planning; Habitat management planning:</i></p> <p><i>Develop state policies for beach raking on state lands to modify or suspend activities during nesting periods, peak migration and other critical times for SGCN.</i></p>	Rank: 2.0
Issue 5	<p>Natural system modifications; Other ecosystem modifications:</p> <p>Shoreline protection practices - Artificial shoreline hardening.</p>	Rank: 2.0
	<p><i>Action 1 Outreach; Partner stakeholder engagement; Others:</i></p> <p><i>Work with the Division of Watershed Stewardship to develop education and outreach, incentives, partnerships and/or regulations as necessary to include private landowners in beach renourishment projects, in place of installing bulkheads and revetments, to minimize impacts to key habitats.</i></p>	Rank: 1.8
Issue 6	<p>Natural system modifications; Other ecosystem modifications:</p> <p>Shoreline protection practices - Beach renourishment.</p>	Rank: 2.0
	<p><i>Action 1 Coordination and Administration; Coordination and Administration; Program/project administrative support:</i></p> <p><i>Work with the Division of Watershed Stewardship to develop state policies for the timing of beach renourishment, and standards for composition and placement of materials, to minimize short-term impacts to nesting sites, roosts and other critical areas.</i></p>	Rank: 1.8
Issue 7	<p>Natural system modifications; Other ecosystem modifications:</p> <p>Shoreline protection practices - Dune construction/stabilization.</p>	Rank: 2.0
	<p><i>Action 1 Planning; Species and habitat management planning; Habitat management planning:</i></p> <p><i>Work with the Division of Watershed Stewardship to assess needs of beach-nesting birds for overwash habitat, and work with public and private landowners to adapt stabilization projects to allow for this need.</i></p>	Rank: 2.0
Issue 8	<p>Natural system modifications; Other ecosystem modifications:</p> <p>Shoreline protection practices - Loss of natural beach dynamics from jetties and groins.</p>	Rank: 2.0
	<p><i>Action 1 Direct Management of Natural Resources; Hazard or infrastructure removal; Shoreline armoring removal:</i></p> <p><i>Work with the Division of Watershed Stewardship to assess and monitor the environmental and economic costs and benefits of individual jetties and groins, and remove those that are ineffective or obsolete.</i></p>	Rank: 2.0

Action 2 Coordination and Administration; Coordination and Administration; Agency administrative support: *Rank: 2.2*

Work with the Division of Watershed Stewardship to develop a source of funding for using beach renourishment to mitigate the impacts of jetties and groins on key habitats.

Action 3 Direct Management of Natural Resources; Create new habitat or natural processes: *Rank: 2.3*

Work with the Division of Watershed Stewardship to identify new materials and methods that use jetties and groins to protect, create or restore key habitats.

Issue 9 Residential and commercial development: Rank: 2.7

Natural beach dynamics causing loss of spawning habitat.

Action 1 Data Collection and Analysis: *Rank: 2.2*

Research the potential cost/benefit of jetties for protecting spawning beaches from wave action.

Habitat Category: Wetlands

Habitat Group: All Wetlands

Habitat Types:

Issue and Actions:

Issue 1	Climate change and severe weather; Sea level rise:	Rank: 1.2
	Climate change - Sea Level Rise.	
<i>Action 1</i>	<i>Data Collection and Analysis:</i> <i>Determine whether these habitats can migrate with SLR.</i>	<i>Rank: 1.2</i>
<i>Action 2</i>	<i>Coordination and Administration; Coordination and Administration; Agency administrative support:</i> <i>Work with the Division of Watershed Stewardship to integrate key habitat and SGCN conservation into long-range planning for sea level rise, considering erosional changes, water temperature, salinity and chemistry (not just SLR).</i>	<i>Rank: 1.8</i>
Issue 2	Pollution; Industrial and military effluents; Type unknown:	Rank: 1.3
	Accidental spills of toxins and sewage.	
<i>Action 1</i>	<i>Outreach; Partner stakeholder engagement:</i> <i>Develop/enhance partnerships with Tri-State Birds Rescue and other wildlife rehabilitators to improve emergency response.</i>	<i>Rank: 1.7</i>
<i>Action 2</i>	<i>Coordination and Administration; Coordination and Administration; Program/project administrative support:</i> <i>Work with the Emergency Response Branch to integrate key habitat and SGCN protection into emergency response planning.</i>	<i>Rank: 1.8</i>
Issue 3	Pollution:	Rank: 1.3
	Contaminants, nutrients, and sediment from residential and agricultural runoff causing wetland habitat degradation.	
<i>Action 1</i>	<i>Data Collection and Analysis:</i> <i>Continue to assess the condition of wetlands relative to degradation caused by residential and agricultural runoff.</i>	<i>Rank: 1.3</i>
<i>Action 2</i>	<i>Outreach:</i> <i>Promote BMP's for implementation by agriculture, homeowners, pest control industry, right of way/maintenance, landscape professionals. Increase use of IPM, BMPs through education and outreach.</i>	<i>Rank: 1.5</i>

	<p><i>Action 3 Education:</i></p> <p><i>Promote BMP's for implementation by agriculture, homeowners, pest control industry, right of way/maintenance, landscape professionals. Increase use of IPM, BMPs through education and outreach.</i></p>	Rank: 1.8
Issue 4	<p>Pollution; Agricultural and forestry effluents:</p> <p>Nutrients and sediments.</p>	Rank: 1.3
	<p><i>Action 1 Coordination and Administration; Coordination and Administration; Agency administrative support:</i></p> <p><i>Work with the Delaware Department of Agriculture to promote the implementation of BMPs for erosion and sediment control.</i></p>	Rank: 1.8
Issue 5	<p>Residential and commercial development; Housing and urban areas:</p> <p>Piers, docks, boardwalks, gazebos, and other shoreline structures.</p>	Rank: 1.3
	<p><i>Action 1 Outreach:</i></p> <p><i>Work with county building officials to encourage developers to construct community piers and docks in subdivisions, in place of individual structures.</i></p>	Rank: 1.8
	<p><i>Action 2 Outreach:</i></p> <p><i>Work with developers to create design standards for piers and docks that minimize habitat loss or fragmentation.</i></p>	Rank: 1.8
Issue 6	<p>Pollution; Industrial and military effluents; Type unknown:</p> <p>Accidental spills of toxins and sewage.</p>	Rank: 1.5
	<p><i>Action 1 Outreach; Partner stakeholder engagement:</i></p> <p><i>Develop/enhance partnerships with Tri-State Birds Rescue and other wildlife rehabilitators to improve emergency response.</i></p>	Rank: 1.7
	<p><i>Action 2 Coordination and Administration; Coordination and Administration; Program/project administrative support:</i></p> <p><i>Work with the Emergency Response Branch to integrate key habitat and SGCN protection into emergency response planning.</i></p>	Rank: 1.8
Issue 7	<p>Invasive and other problematic species genes and diseases; Invasive non native alien species diseases:</p> <p>Invasive plants causing wetland habitat degradation.</p>	Rank: 1.5
	<p><i>Action 1 Direct Management of Natural Resources; Invasive species control:</i></p> <p><i>Focus Phragmites management in key freshwater and low-salinity wetlands.</i></p>	Rank: 1.3

- Action 2 Species Reintroduction and Stocking; Native species restoration: Rank: 1.8*
- Enhance/restore degraded wetlands and adjacent upland habitats (including buffers).*

Issue 8 Pollution; Agricultural and forestry effluents: Rank: 1.5

Nutrients and sediments.

- Action 1 Law Enforcement; Law Enforcement; Law Enforcement: Rank: 1.8*
- Encourage the counties to strengthen enforcement of erosion and sediment control regulations.*
- Action 2 Coordination and Administration; Coordination and Administration; Agency administrative support: Rank: 1.8*
- Work with the Division of Watershed Stewardship to ensure integration of key habitat and SGCN conservation and monitoring into all Pollution Control Strategies.*
- Action 3 Coordination and Administration; Coordination and Administration; Agency administrative support: Rank: 1.8*
- Work with the Division of Watershed Stewardship to promote the implementation of BMPs for erosion and sediment control.*
- Action 4 Coordination and Administration; Coordination and Administration; Agency administrative support: Rank: 1.8*
- Work with the Division of Watershed Stewardship to integrate key habitat and SGCN conservation into state water quality standards for nutrients and sediments.*

Issue 9 Pollution; Agricultural and forestry effluents: Rank: 1.7

Nutrients and sediments.

- Action 1 Coordination and Administration; Coordination and Administration; Agency administrative support: Rank: 1.8*
- Work with the Division of Watershed Stewardship to ensure integration of key habitat and SGCN conservation and monitoring into all Pollution Control Strategies.*
- Action 2 Coordination and Administration; Coordination and Administration; Agency administrative support: Rank: 1.8*
- Work with the Division of Watershed Stewardship to integrate key habitat and SGCN conservation into state water quality standards for nutrients and sediments.*

Issue 10 Pollution; Agricultural and forestry effluents; Herbicides and pesticides:

Rank: 2.0

Residential and commercial development practices - Pesticides.

Action 1 Coordination and Administration; Incentives:

Rank: 1.8

Work with Cooperative Extension to promote IPM implementation to minimize impacts of residential and commercial pesticides on SGCN. Work also with landowner incentive programs to develop incentives for IPM implementation on private golf courses, recreational facilities and common areas.

Issue 11 Pollution; Agricultural and forestry effluents; Herbicides and pesticides:

Rank: 2.2

Action 1 Outreach; Partner stakeholder engagement:

Rank: 1.8

Work with the Delaware Department of Agriculture and the agricultural community to promote implementation of IPM to minimize impacts of agricultural pesticides on SGCN. Work also with landowner incentive programs to develop incentives for IPM implementation on farmland.

Habitat Group: Forested Nontidal Wetlands

Habitat Types:*Piedmont Stream and River Floodplain**Piedmont Seepage Swamp**Bayshore Swamp**Coastal Plain White Cedar Peat Swamp**Coastal Plain Stream and River Floodplain**Coastal Plain Seepage Swamp**Coastal Plain Flatwood and Depression Swamp**Bald Cypress Swamp***Issue and Actions:****Issue 1 Natural system modifications; Dams and water management use:**

Rank: 1.0

Agriculture and forestry operations - Ditching and draining.

Action 1 Coordination and Administration; Incentives:

Rank: 1.8

Work with the Division of Watershed Stewardship to provide incentives to tax ditch associations to implement BMPs that minimize impacts to key habitats.

Issue 2 Agriculture and aquaculture:

Rank: 1.0

Habitat loss and fragmentation - Farmland.

Action 1 Coordination and Administration; Coordination and Administration; Agency administrative support:

Rank: 1.2

Support the Agricultural Lands Preservation Program to protect land from irreversible conversion to other uses.

<i>Action 2</i>	<i>Land and Water Rights Acquisition and Protection; Land acquisition: Coordinate with partners to acquire title to, or easements on, sites that are critical to the conservation of key habitats and SGCN for management by public agencies or NGOs.</i>	<i>Rank: 1.3</i>
<i>Action 3</i>	<i>Planning; Organizational strategic and CMS planning; Organizational strategic and operational planning: Evaluate means of protecting isolated freshwater wetland key habitats on private property, including education and outreach, voluntary guideline, incentives and regulations, as necessary.</i>	<i>Rank: 1.3</i>
<i>Action 4</i>	<i>Coordination and Administration; Incentives: Work with the Delaware Department of Agriculture, the agriculture industry and the Landowners Incentives Program to develop BMPs, and the corresponding incentives, that minimize impacts to key habitats, preserve and restore buffers, and reduce edge effects for area-sensitive SGCN.</i>	<i>Rank: 1.8</i>
Issue 3	Residential and commercial development:	Rank: 1.0
Habitat loss and fragmentation - Residential and commercial structures.		
<i>Action 1</i>	<i>Technical Assistance; Environmental review; Review of proposed projects: Improve federal/state/local coordination of environmental reviews to ensure that potential impacts to key habitats and SGCN are minimized for all major projects.</i>	<i>Rank: 1.2</i>
<i>Action 2</i>	<i>Coordination and Administration; Coordination and Administration; Agency administrative support: Support rigorous implementation of the State Strategies for Policies and Spending to restrict major development to Levels 1-3, where appropriate for residential and commercial development.</i>	<i>Rank: 1.2</i>
<i>Action 3</i>	<i>Land and Water Rights Acquisition and Protection; Land acquisition: Coordinate with partners to acquire title to, or easements on, sites that are critical to the conservation of key habitats and SGCN for management by public agencies or NGOs.</i>	<i>Rank: 1.3</i>
<i>Action 4</i>	<i>Planning; Land use planning: Develop state policies to require incorporation of Key Wildlife Habitats into the plans, including the DEN.</i>	<i>Rank: 1.3</i>

<i>Action 5</i>	<i>Planning; Land use planning:</i> <i>Encourage all counties to adopt environmental design standards for development projects in order to protect key wildlife habitats and SGCN.</i>	<i>Rank: 1.3</i>
<i>Action 6</i>	<i>Planning; Land use planning:</i> <i>Encourage Kent and Sussex counties to adopt overlay zoning ordinances for the DEN and/or green infrastructure.</i>	<i>Rank: 1.3</i>
<i>Action 7</i>	<i>Planning; Organizational strategic and CMS planning; Organizational strategic and operational planning:</i> <i>Evaluate means of protecting forested key habitats on private property, including education and outreach, voluntary guideline, incentives and regulations, as necessary.</i>	<i>Rank: 1.3</i>
<i>Action 8</i>	<i>Planning; Organizational strategic and CMS planning; Organizational strategic and operational planning:</i> <i>Evaluate means of protecting isolated freshwater wetland key habitats on private property, including education and outreach, voluntary guideline, incentives and regulations, as necessary.</i>	<i>Rank: 1.3</i>
<i>Action 9</i>	<i>Outreach; Partner stakeholder engagement:</i> <i>Work with conservation partners, state and county planning officials, and developers to create certification for environmentally-friendly developments, including an associated media campaign with awards.</i>	<i>Rank: 1.8</i>
Issue 4	Pollution; Industrial and military effluents: Chronic water pollution.	Rank: 1.2
<i>Action 1</i>	<i>Law Enforcement; Law Enforcement; Law Enforcement:</i> <i>Support the Division of Water enforcement of existing limits on releases of water pollution.</i>	<i>Rank: 1.2</i>
Issue 5	Transportation and service corridors; Roads and railroads: Habitat loss and fragmentation -Transportation Infrastructure.	Rank: 1.2
<i>Action 1</i>	<i>Coordination and Administration; Coordination and Administration; Agency administrative support:</i> <i>Work with the Delaware Department of Transportation to develop BMPs to integrate key habitat and SGCN conservation into landscaping, mowing, invasive plant control and other road maintenance, including preserving and restoring buffers and reducing edge effects.</i>	<i>Rank: 1.2</i>

Action 2	<i>Planning; Land use planning:</i> <i>Work with the Delaware Department of Transportation to integrate key habitat and SGCN conservation into long-range transportation planning.</i>	Rank: 1.2
Action 3	<i>Coordination and Administration; Coordination and Administration; Agency administrative support:</i> <i>Work with the Delaware Department of Transportation to integrate key habitat and SGCN conservation into wetland and forest mitigation.</i>	Rank: 1.2
Issue 6 Agriculture and aquaculture:		Rank: 1.2
Ditching & draining for agriculture causing wetland habitat degradation.		
Action 1	<i>Data Collection and Analysis; Research survey or monitoring Fish and wildlife populations:</i> <i>Monitor extant SGCN occurrences to determine population status and trends. Conduct surveys for additional occurrences in potential habitats, giving priority to sites with historic occurrences. Monitor status and trends of the extent and condition of key habitats.</i>	Rank: 1.2
Issue 7 Biological resource use; Logging and wood harvesting:		Rank: 1.3
Agricultural and forestry operations - Clearcutting and other forestry practices.		
Action 1	<i>Land and Water Rights Acquisition and Protection; Land acquisition:</i> <i>Coordinate with partners to acquire title to, or easements on, sites that are critical to the conservation of key habitats and SGCN within the DE Ecological Network (DEN), for management by public agencies or NGOs.</i>	Rank: 1.3
Action 2	<i>Planning; Species and habitat management planning; Habitat management planning:</i> <i>Work with the Delaware Forest Service to integrate key habitat and SGCN conservation into forest management planning.</i>	Rank: 1.3
Action 3	<i>Coordination and Administration; Incentives:</i> <i>Work with the Delaware Forest Service, the forestry industry and landowner incentive programs to develop BMPs and corresponding incentives to preserve or restore key habitat buffers and reduce edge effects for area-sensitive SGCN.</i>	Rank: 1.3
Action 4	<i>Outreach; Partner stakeholder engagement:</i> <i>Work with the Delaware Forest Service and the forestry industry to implement a Master Logger program to encourage landowners to work with loggers who harvest timber selectively and are sensitive to key wildlife habitats.</i>	Rank: 1.8

Issue 8 Pollution; Agricultural and forestry effluents:

Rank: 1.3

Agricultural and forestry operations - Nutrients and sediments.

Action 1 Coordination and Administration; Coordination and Administration; Agency administrative support: Rank: 1.8

Work with the Delaware Department of Agriculture to promote the implementation of BMPs for erosion and sediment control.

Action 2 Coordination and Administration; Coordination and Administration; Agency administrative support: Rank: 1.8

Work with the Division of Watershed Stewardship to ensure integration of key habitat and SGCN conservation and monitoring into all Pollution Control Strategies.

Action 3 Coordination and Administration; Coordination and Administration; Agency administrative support: Rank: 1.8

Work with the Division of Watershed Stewardship to integrate key habitat and SGCN conservation into state water quality standards for nutrients and sediments.

Issue 9 Pollution; Agricultural and forestry effluents:

Rank: 1.3

Contaminants from residential and agricultural runoff causing wetland habitat degradation.

Action 1 Data Collection and Analysis: Rank: 1.8

Promote BMP's for implementation by agriculture, homeowners, pest control industry, right of way/maintenance, landscape professionals. Increase use of IPM, BMPs through education and outreach.

Issue 10 Pollution; Garbage and solid waste:

Rank: 1.3

Habitat loss and fragmentation - Landfill facilities.

Action 1 Coordination and Administration; Coordination and Administration; Agency administrative support: Rank: 3.0

Support rigorous implementation of the State Strategies for Policies and Spending to restrict major development to Levels 1-3, as related to landfill facilities.

Issue 11 Invasive and other problematic species genes and diseases; Invasive non native alien species diseases; Named species:

Rank: 1.3

Invasive Earthworms.

Action 1 Data Collection and Analysis; Research survey or monitoring habitat; Monitoring: Rank: 1.8

Assess the impacts of invasive earthworms on forests and use this assessment and long-term monitoring to guide adaptive management, education, outreach and enforcement efforts as necessary.

Issue 12 Pollution; Agricultural and forestry effluents:

Rank: 1.3

Nutrients and sediments from agricultural, commercial, and residential point and non-point sources causing aquatic habitat degradation.

Action 1 Data Collection and Analysis:

Rank: 1.8

Promote BMP's for implementation by agriculture, homeowners, pest control industry, right of way/maintenance, landscape professionals. Increase use of IPM, BMPs through education and outreach.

Issue 13 Biological resource use; Logging and wood harvesting:

Rank: 1.5

Clearcutting and other forestry practices.

Action 1 Coordination and Administration; Coordination and Administration; Agency administrative support:

Rank: 1.2

Encourage the Delaware Department of Agriculture to revise the scoring system of the Agricultural Lands Preservation Act to give increased weight to conservation of key habitats and SGCN.

Issue 14 Invasive and other problematic species genes and diseases; Invasive non native alien species diseases; Unspecified species:

Rank: 1.5

Invasive Plants.

Action 1 Species Reintroduction and Stocking; Native species restoration:

Rank: 1.8

Enhance/restore degraded wetlands and adjacent upland habitats (including buffers).

Issue 15 Agriculture and aquaculture:

Rank: 1.5

Nutrients, sediments, and chemicals (pesticides and herbicides).

Action 1 Law Enforcement; Law Enforcement; Law Enforcement:

Rank: 1.8

Encourage/incentivize the counties to strengthen enforcement of erosion and sediment control and chemical application regulations.

Action 2 Coordination and Administration; Coordination and Administration; Agency administrative support:

Rank: 1.8

Work with the Division of Watershed Stewardship to ensure integration of key habitat and SGCN conservation and monitoring into all Pollution Control Strategies.

Action 3 Coordination and Administration; Coordination and Administration; Agency administrative support:

Rank: 1.8

Work with the Division of Watershed Stewardship to promote the implementation of BMPs for erosion and sediment control and chemical applications.

Issue 16 Pollution; Domestic and urban waste water:

Rank: 1.5

Residential and commercial development practices - Nutrients and sediments.

- Action 1 Law Enforcement; Law Enforcement; Law Enforcement: Rank: 1.8*
Encourage the counties to strengthen enforcement of erosion and sediment control regulations.
- Action 2 Coordination and Administration; Coordination and Administration; Agency administrative support: Rank: 1.8*
Work with the Division of Watershed Stewardship to ensure integration of key habitat and SGCN conservation and monitoring into all Pollution Control Strategies.
- Action 3 Coordination and Administration; Coordination and Administration; Agency administrative support: Rank: 1.8*
Work with the Division of Watershed Stewardship to integrate key habitat and SGCN conservation into state water quality standards for nutrients and sediments.
- Action 4 Coordination and Administration; Coordination and Administration; Agency administrative support: Rank: 1.8*
Work with the Division of Watershed Stewardship to promote the implementation of BMPs for erosion and sediment control.

Issue 17 Natural system modifications; Dams and water management use:

Rank: 1.7

Agricultural and forestry operations - Altered hydrology.

- Action 1 Coordination and Administration; Coordination and Administration; Agency administrative support: Rank: 1.8*
Work with the Delaware Department of Agriculture and NRCS to promote the implementation of BMPs for stormwater management.
- Action 2 Coordination and Administration; Coordination and Administration; Agency administrative support: Rank: 1.8*
Work with the Division of Watershed Stewardship to ensure integration of key habitat and SGCN conservation and monitoring into all Pollution Control Strategies.

Issue 18 Biological resource use; Logging and wood harvesting:

Rank: 1.7

Clearcutting and other forestry practices.

- Action 1 Land and Water Rights Acquisition and Protection; Land acquisition: Rank: 1.3*
Coordinate with partners to acquire title to, or easements on, sites that are critical to the conservation of key habitats and SGCN for management by public agencies or NGOs.

<i>Action 2</i>	<i>Outreach; Partner stakeholder engagement:</i> <i>Work with the Delaware Forest Service and the forestry industry to implement a Master Logger program to encourage landowners to work with loggers who harvest timber selectively and are sensitive to key wildlife habitats.</i>	<i>Rank: 1.3</i>
<i>Action 3</i>	<i>Planning; Species and habitat management planning; Habitat management planning:</i> <i>Work with the Delaware Forest Service to integrate key habitat and SGCN conservation into forest management planning.</i>	<i>Rank: 1.3</i>
<i>Action 4</i>	<i>Coordination and Administration; Incentives:</i> <i>Work with the Delaware Forest Service, the forestry industry and landowner incentive programs to develop BMPs and corresponding incentives to preserve or restore key habitat buffers and reduce edge effects for area-sensitive SGCN.</i>	<i>Rank: 1.3</i>
Issue 19 Invasive and other problematic species genes and diseases; Invasive non native alien species diseases; Unspecified species:		Rank: 1.7
<i>Invasive Plants.</i>		
<i>Action 1</i>	<i>Direct Management of Natural Resources; Planting seeding:</i> <i>Require use of native, Delaware indigenous species for new plantings or replantings on lands managed by the state, similar to the Native Plants Policy of the Division of Parks and Recreation.</i>	<i>Rank: 1.2</i>
<i>Action 2</i>	<i>Coordination and Administration; Coordination and Administration; Program/project administrative support:</i> <i>Support implementation of the Delaware Invasive Species Management Plan, as appropriate, to reduce the impacts of invasive species on key habitats and SGCN.</i>	<i>Rank: 1.2</i>
<i>Action 3</i>	<i>Outreach; Partner stakeholder engagement:</i> <i>Partner with the Delaware Invasive Species Council and land management agencies to integrate key habitat and SGCN conservation into invasives control practices.</i>	<i>Rank: 1.5</i>
<i>Action 4</i>	<i>Outreach; Partner stakeholder engagement:</i> <i>Develop education and outreach, partnerships, voluntary guidelines, incentives, and/or regulations, as necessary, for controlling invasive plants on private property and in private commerce, to minimize impacts to key habitats.</i>	<i>Rank: 1.8</i>

<i>Action 5</i>	<i>Outreach; Partner stakeholder engagement:</i> <i>Work with the Delaware Department of Transportation, Delaware Center for Horticulture and Cooperative Extension to enhance transportation construction and maintenance practices such as requiring the planting of native species, and limiting mowing during breeding, migration or other critical times for SGCN.</i>	<i>Rank: 1.8</i>
<i>Action 6</i>	<i>Direct Management of Natural Resources; Invasive species control:</i> <i>Work with the Delaware Invasive Species Council and conservation land managers to assess and monitor impacts of invasive plants using the Delaware Alien Plant Invasiveness Risk Assessment protocol, and prioritize control efforts based on degree of risk.</i>	<i>Rank: 1.8</i>
<i>Action 7</i>	<i>Data Collection and Analysis; Research survey or monitoring habitat; Monitoring:</i> <i>Work with the Delaware Invasive Species Council and conservation land managers to conduct quantitative invasive plant surveys of key habitats.</i>	<i>Rank: 1.8</i>
<i>Action 8</i>	<i>Planning:</i> <i>Work with the Delaware Invasive Species Council and conservation land managers to develop and implement adaptive management plans for control of invasive species.</i>	<i>Rank: 1.8</i>
<i>Action 9</i>	<i>Coordination and Administration; Coordination and Administration:</i> <i>Work with the Delaware Invasive Species Council to establish an interagency early detection and rapid response system to react to new invasions.</i>	<i>Rank: 1.8</i>
Issue 20	Natural system modifications; Dams and water management use; Extraction of surface water (unknown use): Residential and commercial development practices - Altered hydrology	Rank: 1.7
<i>Action 1</i>	<i>Law Enforcement; Law Enforcement; Law Enforcement:</i> <i>Encourage the counties to develop new stormwater management regulations that create and maintain habitat for SGCN species and to strengthen enforcement of these regulations.</i>	<i>Rank: 1.8</i>

Issue 21 Transportation and service corridors:

Rank: 1.7

Transportation and utility operations and maintenance - Altered Hydrology.

- Action 1 Coordination and Administration; Coordination and Administration; Program/project administrative support: Rank: 1.3*
Work with the Delaware Department of Transportation to integrate key habitat and SGCN conservation into stormwater management design.

Issue 22 Invasive and other problematic species genes and diseases; Problematic native species diseases; Named species:

Rank: 1.7

White-tailed deer.

- Action 1 Data Collection and Analysis; Research survey or monitoring habitat; Monitoring: Rank: 1.2*
Continue to evaluate Quality Deer Management as a long-term strategy for minimizing impacts to key habitats.
- Action 2 Outreach; Recruitment and retention activities; For hunting and shooting: Rank: 1.2*
Encourage federal and NGO conservation land managers to increase deer harvest as necessary to reduce impacts to key habitats.
- Action 3 Outreach; Recruitment and retention activities; For hunting and shooting: Rank: 1.8*
Work with hunters to increase deer harvest on all lands as necessary to reduce impacts to key habitats.

Issue 23 Natural system modifications; Dams and water management use; Extraction of surface water (unknown use):

Rank: 1.8

Residential and commercial development practices - Altered hydrology

- Action 1 Law Enforcement; Law Enforcement; Law Enforcement: Rank: 1.3*
Encourage the counties to develop new stormwater management regulations that create and maintain habitat for SGCN species and to strengthen enforcement of these regulations.
- Action 2 Coordination and Administration; Coordination and Administration; Program/project administrative support: Rank: 1.8*
Work with the Division of Watershed Stewardship to ensure integration of key habitat and SGCN conservation and monitoring into all Pollution Control Strategies.
- Action 3 Coordination and Administration; Coordination and Administration; Program/project administrative support: Rank: 1.8*
Work with the Division of Watershed Stewardship to promote the implementation of BMPs for stormwater management.

- Issue 24 Pollution; Domestic and urban waste water; Herbicides and pesticides:** Rank: 2.0
- Residential and commercial development practices - Pesticides.
- Action 1 Coordination and Administration; Incentives: Rank: 1.8*
- Work with Cooperative Extension to promote IPM implementation to minimize impacts of residential and commercial pesticides on SGCN. Work also with landowner incentive programs to develop incentives for IPM implementation on private golf courses, recreational facilities and common areas.*
- Issue 25 Pollution; Agricultural and forestry effluents; Herbicides and pesticides:** Rank: 2.2
- Agricultural and forestry operations - Pesticides.
- Action 1 Outreach; Partner stakeholder engagement: Rank: 1.8*
- Work with the Delaware Department of Agriculture and the agricultural community to promote implementation of IPM to minimize impacts of agricultural pesticides on SGCN. Work also with landowner incentive programs to develop incentives for IPM implementation on farmland.*
- Issue 26 Resource management needs; Management decision needs:** Rank: 2.2
- Resource management - Habitat/Wildlife Management.
- Action 1 Outreach; Partner stakeholder engagement: Rank: 1.2*
- Encourage Federal and NGO conservation land managers to adapt species and habitat management to increase key habitat patch size and reduce edge effects on SGCN.*
- Issue 27 Biological resource use; Hunting and collecting terrestrial animals; Intentional use:** Rank: 2.3
- Wildlife harvesting - Inappropriate hunting and fishing.
- Action 1 Education; Student training; Wildlife education: Rank: 1.3*
- Develop education and outreach for hunters about the Delmarva fox squirrel to minimize impacts from accidental killing.*
- Issue 28 Invasive and other problematic species genes and diseases; Invasive non native alien species diseases; Named species:** Rank: 2.5
- Gypsy Moth.
- Action 1 Data Collection and Analysis; Research survey or monitoring fish and wildlife populations: Rank: 2.5*
- Support continued gypsy moth monitoring by the Delaware Department of Agriculture.*
- Action 2 Coordination and Administration; Incentives: Rank: 2.5*
- Work with the Delaware Department of Agriculture to provide incentives to landowners for gypsy moth control in key habitats on private lands.*

Issue 29 Pollution; Industrial and military effluents; Type unknown:

Rank: 3.0

Industrial operations - Accidental spills of toxins and sewage.

Action 1 Coordination and Administration; Coordination and Administration; Program/project administrative support:

Rank: 1.8

Work with ALL Emergency Responders to integrate key habitat and SGCN protection into emergency response planning.

Coastal Plain Stream and River Floodplain

Issue 1 Natural system modifications; Other ecosystem modifications:

Rank: 1.3

Habitat loss and fragmentation - Dredge spoil disposal.

Action 1 Direct Management of Natural Resources; Create new habitat or natural processes:

Rank: 1.8

Work with the Division of Watershed Stewardship and the US Army Corps of Engineers to identify sites for use of dredge spoils to create/restore key habitats.

Action 2 Direct Management of Natural Resources; Create new habitat or natural processes:

Rank: 1.8

Work with the Division of Watershed Stewardship and the US Army Corps of Engineers to incorporate key habitat and SGCN conservation into spoil disposal plans.

Action 3 Outreach; Partner stakeholder engagement; Government agency:

Rank: 1.8

Work with the Division of Watershed Stewardship and the US Army Corps of Engineers to mitigate contaminant impacts to SGCN.

Issue 2 Pollution; Garbage and solid waste:

Rank: 1.3

Habitat loss and fragmentation - Landfill facilities.

Action 1 Coordination and Administration; Coordination and Administration; Agency administrative support:

Rank: 1.2

Support rigorous implementation of the State Strategies for Policies and Spending to restrict major development to Levels 1-3.

Issue 3 Agriculture and aquaculture; Livestock farming and ranching; Scale unknown:

Rank: 1.7

Livestock grazing.

Action 1 Coordination and Administration; Incentives:

Rank: 1.3

Work with the Delaware Department of Agriculture to provide incentives to landowners to exclude livestock from key habitats.

Issue 4 **Agriculture and aquaculture; Annual and perennial nontimber crops; Scale unknown:** Rank: 1.8

Farmland.

Action 1 Planning; Species and habitat management planning; Rank: 1.3
Habitat Conservation Plan (HCP) development:
Develop and implement the Habitat Conservation Plan for
Forests in Kent and Sussex Counties to mitigate loss,
fragmentation and degradation of Coastal Plain Upland
Forests.

Issue 5 **Natural system modifications; Dams and water management use; Dams (size unknown):** Rank: 2.5

Water use - Dam operations.

Action 1 Outreach; Partner stakeholder engagement; Government Rank: 2.5
agency:
Work with the Division of Water and water utilities to
evaluate the application of "ecologically sustainable
water management" practices to dam operations to
minimize impacts to key habitats and SGCN.

Piedmont Stream and River Floodplain

Issue 1 **Agriculture and aquaculture:** Rank: 1.0

Ditching & draining for agriculture causing wetland habitat degradation.

Action 1 Data Collection and Analysis; Research survey or Rank: 1.2
monitoring Fish and wildlife populations:
Monitor extant SGCN occurrences to determine
population status and trends. Conduct surveys for
additional occurrences in potential habitats, giving
priority to sites with historic occurrences. Monitor status
and trends of the extent and condition of key habitats.

Habitat Group: Modified Wetlands

Habitat Types: *Stormwater/Retention Basins*
Small Pond
Sewage Treatment Ponds
Mill Pond
Lake/Reservoir
Impoundment
Dredge Spoil Disposal Area

Issue and Actions:

Issue 1	Natural system modifications; Dams and water management use; Extraction of ground water (unknown use):	Rank: 1.7
	Water use - Groundwater withdrawals.	
	<p><i>Action 1 Outreach; Partner stakeholder engagement; Government agency:</i></p> <p><i>Work with the Division of Water to integrate key habitat conservation into protection of "excellent groundwater recharge areas."</i></p>	Rank: 1.3
	<p><i>Action 2 Coordination and Administration:</i></p> <p><i>Incorporate current GW monitoring data into plans and regulation development.</i></p>	Rank: 1.8
	<p><i>Action 3 Outreach; Partner stakeholder engagement; Government agency:</i></p> <p><i>Work with the Division of Water to integrate key habitat conservation into long-range water supply planning.</i></p>	Rank: 1.8
Issue 2	Natural system modifications; Dams and water management use; Extraction of ground water (unknown use):	Rank: 2.0
	Water use - Groundwater withdrawals.	
	<p><i>Action 1 Coordination and Administration:</i></p> <p><i>Incorporate current monitoring data into plans.</i></p>	Rank: 1.3
	<p><i>Action 2 Outreach; Partner stakeholder engagement; Government agency:</i></p> <p><i>Work with the Division of Water to integrate key habitat conservation into protection of "excellent groundwater recharge areas."</i></p>	Rank: 1.3
	<p><i>Action 3 Outreach; Partner stakeholder engagement; Government agency:</i></p> <p><i>Work with the Division of Water to integrate key habitat conservation into long-range water supply planning.</i></p>	Rank: 1.8
Issue 3	Resource management needs:	Rank: 2.5
	Insect control with OMWM and impoundment management possible effects on SGCN and habitats.	
	<p><i>Action 1 Data Collection and Analysis; Research survey or monitoring Fish and wildlife populations:</i></p> <p><i>Continue to research and monitor the impacts of OMWM and impoundment management on SGCN species and habitats.</i></p> <p>The Mosquito Control Section is constantly examining new control alternatives to the use of mosquitocides and analyzing the effects of mosquitocides.</p>	Rank: 2.5

Impoundment

Issue 1	Climate change and severe weather; Sea level rise:	Rank: 1.2
<i>Action 1</i>	<i>Direct Management of Natural Resources:</i> <i>Maintain and improve infrastructure (dikes and WCS) to compensate for SLR.</i>	<i>Rank: 1.0</i>
Issue 2	Invasive and other problematic species genes and diseases:	Rank: 1.5
	Invasive plants and wildlife species (i.e., muskrat, cattail, phragmites).	
<i>Action 1</i>	<i>Direct Management of Natural Resources; Invasive species control:</i> <i>Manage nuisance/invasive species.</i>	<i>Rank: 1.5</i>
Issue 3	Pollution; Agricultural and forestry effluents:	Rank: 1.5
	Nutrients and sediments.	
<i>Action 1</i>	<i>Direct Management of Natural Resources; Instream Modification:</i> <i>Work towards sediment accretion through a variety of techniques including beneficial dredged material.</i>	<i>Rank: 1.8</i>

Habitat Group: Open Nontidal Wetlands

<u>Habitat Types:</u>	<i>Sea Level Fen</i>
	<i>Piedmont Seepage Meadow</i>
	<i>Interdunal Wetlands</i>
	<i>Freshwater Shrub Swamp</i>
	<i>Emergent Freshwater Marsh</i>
	<i>Coastal Plain Seepage Fen</i>
	<i>Coastal Plain Pond</i>

Issue and Actions:

Issue 1	Transportation and service corridors; Roads and railroads:	Rank: 1.0
	Habitat loss and fragmentation -Transportation Infrastructure.	
<i>Action 1</i>	<i>Coordination and Administration; Coordination and Administration; Agency administrative support:</i> <i>Work with the Delaware Department of Transportation to develop BMPs to integrate key habitat and SGCN conservation into landscaping, mowing, invasive plant control and other road maintenance, including preserving and restoring buffers and reducing edge effects.</i>	<i>Rank: 1.2</i>
<i>Action 2</i>	<i>Planning; Land use planning:</i> <i>Work with the Delaware Department of Transportation to integrate key habitat and SGCN conservation into long-range transportation planning.</i>	<i>Rank: 1.2</i>

	<p><i>Action 3 Coordination and Administration; Coordination and Administration; Agency administrative support:</i></p> <p><i>Work with the Delaware Department of Transportation to integrate key habitat and SGCN conservation into wetland and forest mitigation.</i></p>	Rank: 1.2
Issue 2	Climate change and severe weather; Sea level rise:	Rank: 1.2
	<p><i>Action 1 Coordination and Administration; Coordination and Administration; Program/project administrative support:</i></p> <p><i>Support implementation of actions to address climate change, as appropriate, to reduce greenhouse gas emissions and increase carbon sequestration.</i></p>	Rank: 1.2
	<p><i>Action 2 Planning; Species and habitat management planning:</i></p> <p><i>Incorporate sea level rise scenarios in all relevant area, habitat and species management plans.</i></p>	Rank: 1.7
	<p><i>Action 3 Coordination and Administration; Coordination and Administration; Agency administrative support:</i></p> <p><i>Work with the Division of Watershed Stewardship to integrate key habitat and SGCN conservation into long-range planning for sea level rise.</i></p>	Rank: 1.8
Issue 3	Natural system modifications; Dams and water management use; Extraction of ground water (unknown use):	Rank: 1.7
	Water use - Groundwater withdrawals.	
	<p><i>Action 1 Outreach; Partner stakeholder engagement; Government agency:</i></p> <p><i>Work with the Division of Water to integrate key habitat conservation into protection of "excellent groundwater recharge areas."</i></p>	Rank: 1.3
	<p><i>Action 2 Coordination and Administration:</i></p> <p><i>Incorporate current GW monitoring data into plans and regulation development.</i></p>	Rank: 1.8
	<p><i>Action 3 Outreach; Partner stakeholder engagement; Government agency:</i></p> <p><i>Work with the Division of Water to integrate key habitat conservation into long-range water supply planning.</i></p>	Rank: 1.8

Coastal Plain Pond

Issue 1	Natural system modifications; Dams and water management use:	Rank: 1.0
	Agricultural and forestry operations - Ditching and draining.	
<i>Action 1</i>	<i>Coordination and Administration; Incentives:</i> <i>Work with the Division of Watershed Stewardship to provide incentives to tax ditch associations to implement BMPs that minimize impacts to key habitats.</i>	<i>Rank: 1.8</i>
Issue 2	Agriculture and aquaculture:	Rank: 1.0
	Habitat loss and fragmentation - Farmland.	
<i>Action 1</i>	<i>Coordination and Administration; Coordination and Administration; Agency administrative support:</i> <i>Support the Agricultural Lands Preservation Program to protect land from irreversible conversion to other uses.</i>	<i>Rank: 1.2</i>
<i>Action 2</i>	<i>Land and Water Rights Acquisition and Protection; Land acquisition:</i> <i>Coordinate with partners to acquire title to, or easements on, sites that are critical to the conservation of key habitats and SGCN for management by public agencies or NGOs.</i>	<i>Rank: 1.3</i>
<i>Action 3</i>	<i>Planning; Organizational strategic and CMS planning; Organizational strategic and operational planning:</i> <i>Evaluate means of protecting forested key habitats on private property, including education and outreach, voluntary guideline, incentives and regulations, as necessary.</i>	<i>Rank: 1.3</i>
<i>Action 4</i>	<i>Planning; Organizational strategic and CMS planning; Organizational strategic and operational planning:</i> <i>Evaluate means of protecting isolated freshwater wetland key habitats on private property, including education and outreach, voluntary guideline, incentives and regulations, as necessary.</i>	<i>Rank: 1.3</i>
<i>Action 5</i>	<i>Coordination and Administration; Incentives:</i> <i>Work with the Delaware Department of Agriculture, the agriculture industry and the Landowners Incentives Program to develop BMPs, and the corresponding incentives, that minimize impacts to key habitats, preserve and restore buffers, and reduce edge effects for area-sensitive SGCN.</i>	<i>Rank: 1.8</i>

Issue 3 Residential and commercial development:

Rank: 1.0

Habitat loss and fragmentation - Residential and commercial structures.

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| Action 1 | <i>Technical Assistance; Environmental review; Review of proposed projects:</i>

<i>Improve federal/state/local coordination of environmental reviews to ensure that potential impacts to key habitats and SGCN are minimized for all major projects.</i> | Rank: 1.2 |
| Action 2 | <i>Coordination and Administration; Coordination and Administration; Agency administrative support:</i>

<i>Support rigorous implementation of the State Strategies for Policies and Spending to restrict major development to Levels 1-3.</i> | Rank: 1.2 |
| Action 3 | <i>Land and Water Rights Acquisition and Protection; Land acquisition:</i>

<i>Coordinate with partners to acquire title to, or easements on, sites that are critical to the conservation of key habitats and SGCN for management by public agencies or NGOs.</i> | Rank: 1.3 |
| Action 4 | <i>Planning; Land use planning:</i>

<i>Develop state policies to require incorporation of Key Wildlife Habitats into plans and planning (including the DEN).</i> | Rank: 1.3 |
| Action 5 | <i>Planning; Land use planning:</i>

<i>Encourage all counties to adopt environmental design standards for development projects in order to protect key wildlife habitats and SGCN.</i> | Rank: 1.3 |
| Action 6 | <i>Planning; Land use planning:</i>

<i>Encourage Kent and Sussex counties to adopt overlay zoning ordinances for the DEN and/or green infrastructure.</i> | Rank: 1.3 |
| Action 7 | <i>Planning; Organizational strategic and CMS planning; Organizational strategic and operational planning:</i>

<i>Evaluate means of protecting forested key habitats on private property, including education and outreach, voluntary guideline, incentives and regulations, as necessary.</i> | Rank: 1.3 |
| Action 8 | <i>Planning; Organizational strategic and CMS planning; Organizational strategic and operational planning:</i>

<i>Evaluate means of protecting isolated freshwater wetland key habitats on private property, including education and outreach, voluntary guideline, incentives and regulations, as necessary.</i> | Rank: 1.3 |

Action 9 Outreach; Partner stakeholder engagement: Rank: 1.8

Work with conservation partners, state and county planning officials, and developers to create certification for environmentally-friendly developments, including an associated media campaign with awards.

Issue 4 Transportation and service corridors; Roads and railroads:

Rank: 1.2

Habitat loss and fragmentation -Transportation Infrastructure.

Action 1	Coordination and Administration; Coordination and Administration; Agency administrative support:	Rank: 1.2
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Work with the Delaware Department of Transportation to develop BMPs to integrate key habitat and SGCN conservation into landscaping, mowing, invasive plant control and other road maintenance, including preserving and restoring buffers and reducing edge effects.

Action 2 Planning; Land use planning: *Rank: 1.2*

Work with the Delaware Department of Transportation to integrate key habitat and SGCN conservation into long-range transportation planning.

Action 3	Coordination and Administration; Coordination and Administration; Agency administrative support:	Rank: 1.2
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Work with the Delaware Department of Transportation to integrate key habitat and SGCN conservation into wetland and forest mitigation.

Issue 5 Biological resource use; Logging and wood harvesting:

Rank: 1.3

Agricultural and forestry operations - Clearcutting and other forestry practices.

Action 1	Land and Water Rights Acquisition and Protection; Land acquisition:	Rank: 1.3
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Coordinate with partners to acquire title to, or easements on, sites that are critical to the conservation of key habitats and SGCN for management by public agencies or NGOs.

Action 2 Outreach; Partner stakeholder engagement: Rank: 1.3

Work with the Delaware Forest Service and the forestry industry to implement a Master Logger program to encourage landowners to work with loggers who harvest timber selectively and are sensitive to key wildlife habitats.

Action 3	Planning; Species and habitat management planning; Habitat management planning:	Rank: 1.3
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Work with the Delaware Forest Service to integrate key habitat and SGCN conservation into forest management planning.

	<p><i>Action 4 Coordination and Administration; Incentives:</i></p> <p><i>Work with the Delaware Forest Service, the forestry industry and landowner incentive programs to develop BMPs and corresponding incentives to preserve or restore key habitat buffers and reduce edge effects for area-sensitive SGCN.</i></p>	<p><i>Rank: 1.3</i></p>
Issue 6	<p>Pollution; Agricultural and forestry effluents:</p>	<p>Rank: 1.3</p>
	<p>Agricultural and forestry operations - Nutrients and sediments.</p>	
	<p><i>Action 1 Coordination and Administration; Coordination and Administration; Agency administrative support:</i></p> <p><i>Work with the Delaware Department of Agriculture to promote the implementation of BMPs for erosion and sediment control.</i></p>	<p><i>Rank: 1.8</i></p>
	<p><i>Action 2 Coordination and Administration; Coordination and Administration; Agency administrative support:</i></p> <p><i>Work with the Division of Watershed Stewardship to ensure integration of key habitat and SGCN conservation and monitoring into all Pollution Control Strategies.</i></p>	<p><i>Rank: 1.8</i></p>
	<p><i>Action 3 Coordination and Administration; Coordination and Administration; Agency administrative support:</i></p> <p><i>Work with the Division of Watershed Stewardship to integrate key habitat and SGCN conservation into state water quality standards for nutrients and sediments.</i></p>	<p><i>Rank: 1.8</i></p>
Issue 7	<p>Invasive and other problematic species genes and diseases; Invasive non native alien species diseases; Unspecified species:</p>	<p>Rank: 1.5</p>
	<p>Invasive Plants.</p>	
	<p><i>Action 1 Direct Management of Natural Resources; Planting seeding:</i></p> <p><i>Require use of native, Delaware indigenous species for new plantings or replantings on lands managed by the state, similar to the Native Plants Policy of the Division of Parks and Recreation.</i></p>	<p><i>Rank: 1.2</i></p>
	<p><i>Action 2 Coordination and Administration; Coordination and Administration; Program/project administrative support:</i></p> <p><i>Support implementation of the Delaware Invasive Species Management Plan, as appropriate, to reduce the impacts of invasive species on key habitats and SGCN.</i></p>	<p><i>Rank: 1.2</i></p>
	<p><i>Action 3 Outreach; Partner stakeholder engagement:</i></p> <p><i>Develop education and outreach, partnerships, voluntary guidelines, incentives, and/or regulations, as necessary, for controlling invasive plants on private property and in private commerce, to minimize impacts to key habitats.</i></p>	<p><i>Rank: 1.8</i></p>

Action 3 Coordination and Administration; Coordination and Administration; Agency administrative support: Rank: 1.8

Work with the Division of Watershed Stewardship to promote the implementation of BMPs for erosion and sediment control.

Action 4 Coordination and Administration; Coordination and Administration; Agency administrative support: Rank: 1.8

Work with the Division of Watershed Stewardship to integrate key habitat and SGCN conservation into state water quality standards for nutrients and sediments.

Issue 9 Pollution: Rank: 1.5

Water quality and overall health of remaining Delmarva Bays (from domestic and urban wastewater, agricultural and forestry effluents, and industrial and military effluents).

Action 1 Direct Management of Natural Resources: Rank: 1.3

Preserve, maintain, or create 300-foot forested buffers around Delmarva Bays.

Issue 10 Natural system modifications; Dams and water management use: Rank: 1.7

Agricultural and forestry operations - Altered hydrology.

Action 1 Coordination and Administration; Coordination and Administration; Agency administrative support: Rank: 1.8

Work with the Delaware Department of Agriculture to promote the implementation of BMPs for stormwater management.

Action 2 Coordination and Administration; Coordination and Administration; Agency administrative support: Rank: 1.8

Work with the Division of Watershed Stewardship and Tributary Action Teams to ensure integration of key habitat and SGCN conservation and monitoring into all Pollution Control Strategies.

Issue 11 Pollution; Agricultural and forestry effluents; Herbicides and pesticides: Rank: 2.0

Agricultural and forestry operations - Pesticides.

Action 1 Outreach; Partner stakeholder engagement: Rank: 1.8

Work with the Delaware Department of Agriculture and the agricultural community to promote implementation of IPM to minimize impacts of agricultural pesticides on SGCN. Work also with landowner incentive programs to develop incentives for IPM implementation on farmland.

Issue 12 Resource management needs; Management decision needs:

Rank: 2.2

Resource management - Habitat/Wildlife Management.

Action 1 Direct Management of Natural Resources:

Rank: 1.2

*Implement the Bog Turtle Recovery Plan.***Habitat Group: Tidal Wetlands**

Habitat Types: *Tidal Salt Marsh and Shrubland (High)**Tidal Salt Marsh (Low)**Intertidal Sand Flat**Intertidal Mud Flat**Freshwater Tidal Swamp**Fresh and Oligohaline Tidal Marsh and Shrubland**Brackish Tidal Marsh and Shrubland***Issue and Actions:****Issue 1 Residential and commercial development:**

Rank: 1.0

Upland buffer loss - Residential and Commercial Structures.

Action 1 Technical Assistance; Environmental review; Review of proposed projects:

Rank: 1.2

*Improve federal/state/local coordination of environmental reviews to ensure that potential impacts to key habitats and SGCN are minimized for all major projects.**Action 2 Coordination and Administration; Coordination and Administration; Agency administrative support:*

Rank: 1.2

*Support rigorous implementation of the State Strategies for Policies and Spending to restrict major development to Levels 1-3.**Action 3 Planning; Land use planning:*

Rank: 1.3

*Develop state policies to require incorporation of Key Wildlife Habitats into plans and planning (including the DEN).**Action 4 Planning; Land use planning:*

Rank: 1.3

*Encourage all counties to adopt environmental design standards for development projects in order to avoid, minimize, and negate effects to key wildlife habitats and SGCN, and work with developers to implement.**Action 5 Outreach; Partner stakeholder engagement:*

Rank: 1.8

Work with conservation partners, state and county planning officials, and developers to create certification for environmentally-friendly developments, including an associated media campaign with awards.

Issue 2	Climate change and severe weather; Sea level rise:	Rank: 1.2
Action 1	<i>Coordination and Administration; Coordination and Administration; Program/project administrative support:</i> <i>Support implementation of actions to address climate change, as appropriate, to reduce greenhouse gas emissions and increase carbon sequestration.</i>	Rank: 1.2
Action 2	<i>Planning; Species and habitat management planning:</i> <i>Incorporate sea level rise scenarios in all relevant area, habitat and species management plans.</i>	Rank: 1.7
Action 3	<i>Coordination and Administration; Coordination and Administration; Agency administrative support:</i> <i>Work with the Division of Watershed Stewardship to integrate key habitat and SGCN conservation into long-range planning for sea level rise.</i>	Rank: 1.8
Issue 3	Pollution; Industrial and military effluents:	Rank: 1.2
Chronic water pollution.		
Action 1	<i>Law Enforcement; Law Enforcement; Law Enforcement:</i> <i>Support the Division of Water enforcement of existing limits on releases of water pollution.</i>	Rank: 1.2
Issue 4	Natural system modifications; Other ecosystem modifications:	Rank: 1.2
Habitat loss and fragmentation - Dredge spoil disposal.		
Action 1	<i>Direct Management of Natural Resources; Create new habitat or natural processes:</i> <i>Work with the Division of Watershed Stewardship and the US Army Corps of Engineers to ensure spoil disposal plans benefit key habitat and SGCN and avoid impacts, enact time of year restrictions on deposition.</i>	Rank: 1.8
Action 2	<i>Direct Management of Natural Resources; Create new habitat or natural processes:</i> <i>Work with the Division of Watershed Stewardship and the US Army Corps of Engineers to identify sites for beneficial use of dredge spoils to create/restore key habitats.</i>	Rank: 1.8
Issue 5	Residential and commercial development:	Rank: 1.2
Upland buffer loss - Residential and Commercial Structures.		
Action 1	<i>Land and Water Rights Acquisition and Protection; Land acquisition:</i> <i>Coordinate with partners to acquire title to, or easements on, sites that are critical to the conservation of key habitats and SGCN for management by public agencies or NGOs.</i>	Rank: 1.3

Issue 6	Natural system modifications; Other ecosystem modifications:	Rank: 1.3
	Shoreline protection practices - Artificial shoreline hardening.	
<i>Action 1</i>	<i>Coordination and Administration; Incentives:</i> <i>Provide incentives for private landowners to restore wetlands, in place of installing bulkheads and revetments, to minimize impacts to key habitats.</i>	<i>Rank: 1.3</i>
Issue 7	Transportation and service corridors; Roads and railroads:	Rank: 1.5
	Habitat loss and fragmentation -Transportation Infrastructure.	
<i>Action 1</i>	<i>Coordination and Administration; Coordination and Administration; Agency administrative support:</i> <i>Work with the Delaware Department of Transportation to develop BMPs to integrate key habitat and SGCN conservation into landscaping, mowing, invasive plant control and other road maintenance, including preserving and restoring buffers and reducing edge effects.</i>	<i>Rank: 1.2</i>
<i>Action 2</i>	<i>Planning; Land use planning:</i> <i>Work with the Delaware Department of Transportation to integrate key habitat and SGCN conservation into long-range transportation planning.</i>	<i>Rank: 1.2</i>
<i>Action 3</i>	<i>Coordination and Administration; Coordination and Administration; Agency administrative support:</i> <i>Work with the Delaware Department of Transportation to integrate key habitat and SGCN conservation into wetland and forest mitigation.</i>	<i>Rank: 1.2</i>
Issue 8	Invasive and other problematic species genes and diseases; Invasive non native alien species diseases; Named species:	Rank: 1.5
	Nutria.	
<i>Action 1</i>	<i>Outreach:</i> <i>Educate about the detrimental effects of Nutria.</i>	<i>Rank: 1.5</i>
<i>Action 2</i>	<i>Direct Management of Natural Resources; Invasive species control:</i> <i>Eradicate Nutria.</i>	<i>Rank: 1.5</i>
<i>Action 3</i>	<i>Data Collection and Analysis; Research survey or monitoring habitat; Monitoring:</i> <i>Assess the potential for impacts to key habitats, monitor populations, and develop adaptive management strategies if necessary.</i>	<i>Rank: 1.8</i>
Issue 9	Transportation and service corridors:	Rank: 1.5
	Shoreline erosion is exacerbated by commercial ship traffic.	
<i>Action 1</i>	<i>Direct Management of Natural Resources:</i>	<i>Rank: 1.2</i>

Issue 10 Climate change and severe weather:

Rank: 1.5

Shoreline erosion is exacerbated by severe coastal storm events.

Action 1 Direct Management of Natural Resources: Rank: 2.0

Issue 11 Residential and commercial development:

Rank: 1.7

Open water in the tidal marsh has expanded due to marsh ditching and channelization.

Action 1 Direct Management of Natural Resources: Rank: 1.2

Action 2 Planning: Rank: 1.8

Action 3 Direct Management of Natural Resources; Create new habitat or natural processes: Rank: 2.0

Fresh and Oligohaline Tidal Marsh and Shrubland**Issue 1 Climate change and severe weather; Sea level rise:**

Rank: 1.0

Action 1 Coordination and Administration; Coordination and Administration; Program/project administrative support: Rank: 1.2
Support implementation of actions to address climate change, as appropriate, to reduce greenhouse gas emissions and increase carbon sequestration.

Action 2 Planning; Species and habitat management planning: Rank: 1.7
Incorporate sea level rise scenarios in all relevant area, habitat and species management plans.

Action 3 Coordination and Administration; Coordination and Administration; Agency administrative support: Rank: 1.8
Work with the Division of Watershed Stewardship to integrate key habitat and SGCN conservation into long-range planning for sea level rise.

Issue 2 Agriculture and aquaculture:

Rank: 1.0

Upland buffer loss - Farmland.

Action 1 Coordination and Administration; Coordination and Administration; Agency administrative support: Rank: 1.2
Support the Agricultural Lands Preservation Program to protect land from irreversible conversion to other uses.

Action 2 Land and Water Rights Acquisition and Protection; Land acquisition: Rank: 1.3
Coordinate with partners to acquire title to, or easements on, sites that are critical to the conservation of key habitats and SGCN for management by public agencies or NGOs.

Issue 2 Biological resource use; Logging and wood harvesting:

Rank: 1.3

Agricultural and forestry operations - Clearcutting and other forestry practices.

Action 1 Land and Water Rights Acquisition and Protection; Land acquisition: Rank: 1.3

Coordinate with partners to acquire title to, or easements on, sites that are critical to the conservation of key habitats and SGCN for management by public agencies or NGOs.

Action 2 Outreach; Partner stakeholder engagement: Rank: 1.3

Work with the Delaware Forest Service and the forestry industry to implement a Master Logger program to encourage landowners to work with loggers who harvest timber selectively and are sensitive to key wildlife habitats.

Action 3 Planning; Species and habitat management planning; Habitat management planning: Rank: 1.3

Work with the Delaware Forest Service to integrate key habitat and SGCN conservation into forest management planning.

Action 4 Coordination and Administration; Incentives: Rank: 1.3

Work with the Delaware Forest Service, the forestry industry and landowner incentive programs to develop BMPs and corresponding incentives to preserve or restore key habitat buffers and reduce edge effects for area-sensitive SGCN.

Issue 3 Agriculture and aquaculture:

Rank: 1.3

Habitat loss and fragmentation - Farmland.

Action 1 Coordination and Administration; Coordination and Administration; Agency administrative support: Rank: 1.2

Support the Agricultural Lands Preservation Program to protect land from irreversible conversion to other uses.

Action 2 Land and Water Rights Acquisition and Protection; Land acquisition: Rank: 1.3

Coordinate with partners to acquire title to, or easements on, sites that are critical to the conservation of key habitats and SGCN for management by public agencies or NGOs.

Action 3 Planning; Organizational strategic and CMS planning; Organizational strategic and operational planning: Rank: 1.3

Evaluate means of protecting forested key habitats on private property, including education and outreach, voluntary guideline, incentives and regulations, as necessary.

	<p><i>Action 4 Planning; Organizational strategic and CMS planning; Organizational strategic and operational planning:</i></p> <p><i>Evaluate means of protecting isolated freshwater wetland key habitats on private property, including education and outreach, voluntary guideline, incentives and regulations, as necessary.</i></p>	Rank: 1.3
	<p><i>Action 5 Coordination and Administration; Incentives:</i></p> <p><i>Work with the Delaware Department of Agriculture, the agriculture industry and the Landowners Incentives Program to develop BMPs, and the corresponding incentives, that minimize impacts to key habitats, preserve and restore buffers, and reduce edge effects for area-sensitive SGCN.</i></p>	Rank: 1.8
Issue 4	Pollution; Garbage and solid waste:	Rank: 1.3
	Habitat loss and fragmentation - Landfill facilities.	
	<p><i>Action 1 Coordination and Administration; Coordination and Administration; Agency administrative support:</i></p> <p><i>Support rigorous implementation of the State Strategies for Policies and Spending to restrict major development to Levels 1-3.</i></p>	Rank: 1.2
Issue 5	Transportation and service corridors; Utility and service lines:	Rank: 1.3
	Habitat loss and fragmentation - Utility Corridors.	
	<p><i>Action 1 Coordination and Administration; Coordination and Administration; Agency administrative support:</i></p> <p><i>Work with utilities to develop BMPs to integrate key habitat and SGCN conservation into corridor maintenance, including controlling invasive species, preserving and restoring buffers and reducing edge effects.</i></p>	Rank: 1.3
Issue 6	Residential and commercial development; Housing and urban areas:	Rank: 1.3
	Residential and commercial practices - Piers and docks.	
	<p><i>Action 1 Outreach:</i></p> <p><i>Work with county building officials to encourage developers to construct community piers and docks in subdivisions, in place of individual structures.</i></p>	Rank: 1.3
	<p><i>Action 2 Outreach:</i></p> <p><i>Work with developers to create design standards for piers and docks that minimize habitat loss or fragmentation.</i></p>	Rank: 1.8

Issue 7	Pollution; Agricultural and forestry effluents; Herbicides and pesticides:	Rank: 2.0
	Agricultural and forestry operations - Pesticides.	
<i>Action 1</i>	<i>Outreach; Partner stakeholder engagement:</i> <i>Work with the Delaware Department of Agriculture and the agricultural community to promote implementation of IPM to minimize impacts of agricultural pesticides on SGCN. Work also with landowner incentive programs to develop incentives for IPM implementation on farmland.</i>	Rank: 1.8

Issue 8	Pollution; Agricultural and forestry effluents; Herbicides and pesticides:	Rank: 2.0
	Residential and commercial development practices - Pesticides.	
<i>Action 1</i>	<i>Coordination and Administration; Incentives:</i> <i>Work with Cooperative Extension to promote IPM implementation to minimize impacts of residential and commercial pesticides on SGCN. Work also with landowner incentive programs to develop incentives for IPM implementation on private golf courses, recreational facilities and common areas.</i>	Rank: 1.8

Tidal Salt Marsh and Shrubland (High)

Issue 1	Agriculture and aquaculture:	Rank: 1.0
	Upland buffer loss - Farmland.	
<i>Action 1</i>	<i>Coordination and Administration; Coordination and Administration; Agency administrative support:</i> <i>Support the Agricultural Lands Preservation Program to protect land from irreversible conversion to other uses.</i>	Rank: 1.2
<i>Action 2</i>	<i>Land and Water Rights Acquisition and Protection; Land acquisition:</i> <i>Coordinate with partners to acquire title to, or easements on, sites that are critical to the conservation of key habitats and SGCN for management by public agencies or NGOs.</i>	Rank: 1.3
<i>Action 3</i>	<i>Planning; Organizational strategic and CMS planning; Organizational strategic and operational planning:</i> <i>Evaluate means of protecting forested key habitats on private property, including education and outreach, voluntary guideline, incentives and regulations, as necessary.</i>	Rank: 1.3
<i>Action 4</i>	<i>Planning; Organizational strategic and CMS planning; Organizational strategic and operational planning:</i> <i>Evaluate means of protecting isolated freshwater wetland key habitats on private property, including education and outreach, voluntary guideline, incentives and regulations, as necessary.</i>	Rank: 1.3

Action 5 Coordination and Administration; Incentives:

Rank: 1.8

Work with the Delaware Department of Agriculture, the agriculture industry and the Landowners Incentives Program to develop BMPs, and the corresponding incentives, that minimize impacts to key habitats, preserve and restore buffers, and reduce edge effects for area-sensitive SGCN.